RABENORT'S GEOGRAPHY

WILLIAM RABENORT

THE UNITED STATES AS A WHOLE

AMERICAN BOOK COMPANY

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Frontispiece, Rabenort's United States as a Whole

RABENORT'S GEOGRAPHY

THE UNITED STATES

AS A WHOLE

BY

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W. P. I.

Preface

This book describes in bold outlines the forms of life and nature which characterize the United States as a whole.

The world is the home of man, and no part of it is more attractive or better repays study than the land in which we live. In this book, as in the other volumes of the series, emphasis is laid upon typical occupations, customs, pastimes, and other phases of life. The human relations of such physiographic features as surface, streams, climate, plants and animals are, also, treated fully enough.

The facts and inferences of geography that please girls and boys are those that are most useful to the traveler, farmer, fisherman, miner, mechanic, manufacturer, and merchant. Children are interested in the workers who provide food, clothing, shelter, furniture, playthings, tools, machinery, and other commodities which touch the lives of children. They like to know where these things come from, how they are obtained, how prepared, and how used. The investigation and explanation of such facts make geography for many children the most interesting and practical of all school subjects. Therefore, the applications of geography to business and industry predominate in this book, and such topics as forests, waterways, crops, farm animals, minerals, transportation lines, leading manufactures, exports and imports are treated more fully than in most elementary textbooks.

The book is generously illustrated. Almost two hundred instructive maps and pictures reinforce the text with a bulk of geographical material which could not be presented with equal reality in any other way. The maps deal with such phases of economic geography as railroads, steamship lines, domestic animals, crops, and manufactures. All details which usually make such maps too hard for children to understand have been left out, and it is believed that if skillfully used, these maps will train children to interpret the graphic form in which the data of geography are often given. Both maps and pictures enhance the study of contemporary human affairs which the text is designed to foster.

The thanks of the writer are due to Miss Sophia Regina Borger, who read the proofs of this book, and to Mr. Jacob H. Rohrbach, who contributed the photographs reproduced on pages 46 and 121. W. R.

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THE UNITED STATES AS A WHOLE

INTRODUCTION

The United States is our country. It is part of America, or the New World, which Columbus discovered in 1492, more than four hundred years ago. After the discovery by Columbus, white men from different countries in Europe made settlements in the New World. The English people built up thirteen colonies along the Atlantic coast between the peninsulas of Nova Scotia and Florida.

These thirteen colonies were each controlled by England for a long time; but in 1776 they adopted the Declaration of Independence, and joined in the Revolutionary War, by which they made themselves free from the Mother Country.

Each colony thus became a state, but united with the others to form the country called the United States. The original thirteen states are New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. They occupied the narrow strip of land between the Atlantic Ocean and the Appalachian Mountains. The land west of the mountains as far as the Mississippi River belonged to the United States, but very little of it was settled.

Year by year the enterprising and energetic Americans conquered the wilderness. Their progress was not stopped by mountains, forests, rivers, or deserts; nor

120
110
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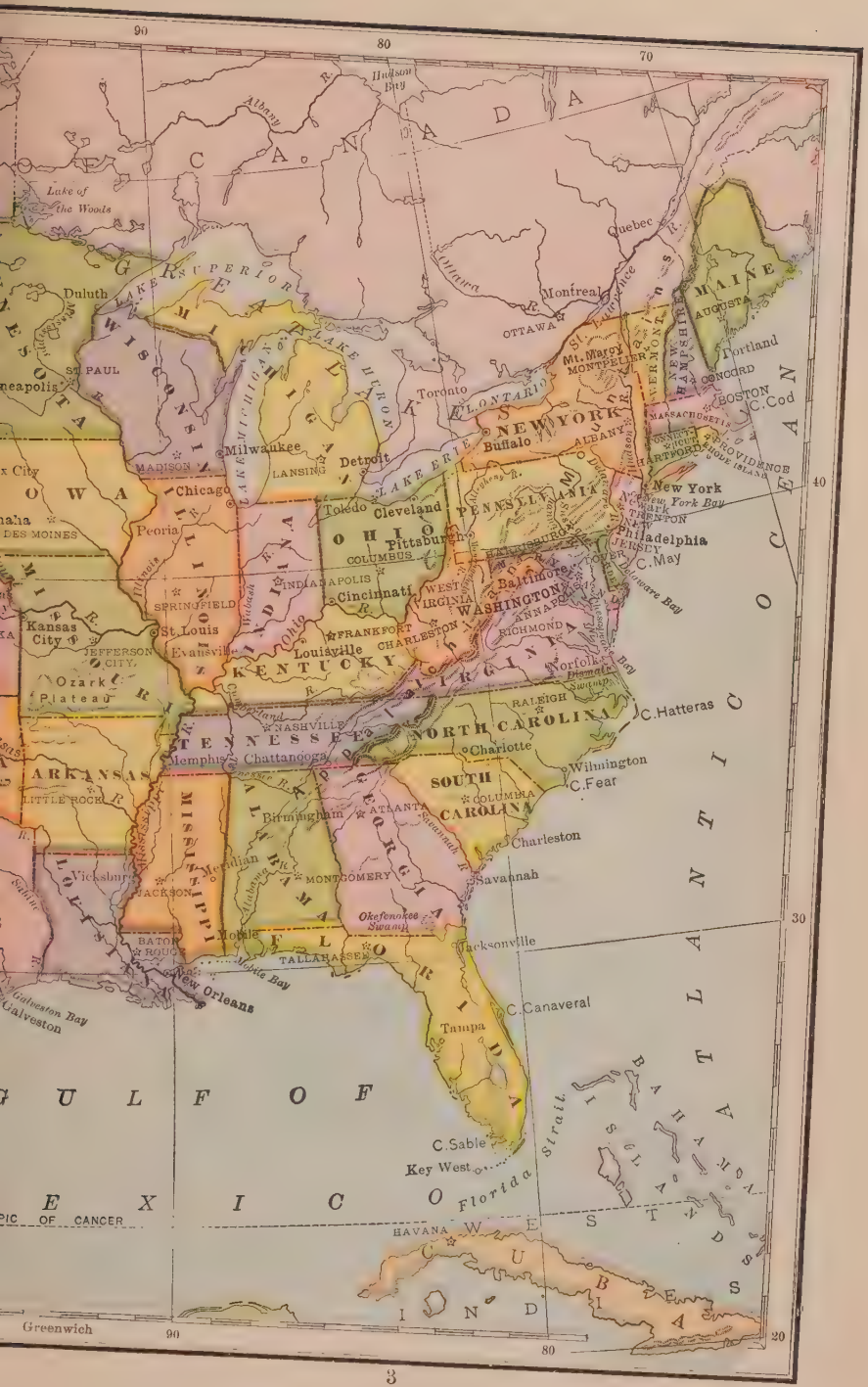
Strait of Juan de Fuca
C. Flattery
Vancouver
Vancouver I.
Seattle
Tacoma
Olympia
WASHINGTON
Spokane
Portland
Columbia R.
OREGON
SALEM
C. Blanco
Mendocino
C. Cod
IDAHO
BOISE
Snake R.
MONTANA
Missouri R.
Butte
HELENA
Yellowstone R.
NORTH DAKOTA
BISMARCK
YELLOWSTONE NATIONAL PARK
Black Hills
Bad Lands
SOUTH DAKOTA
PIERRE
WYOMING
CHEYENNE
NEBRASKA
Platte R.
GREAT BASIN
Great Salt Lake
SALT LAKE CITY
Jordan R.
Sevier R.
NEVADA
CARSON CITY
SACRAMENTO
Yosemite Fall
San Francisco
UTAH
Green R.
Grand R.
COLORADO
DENVER
Pueblo
Arkansas R.
KANSAS
Wichita
Pt. Conception
Los Angeles
Death Val.
Colorado R.
Grand Canyon
San Francisco Mts.
ARIZONA
PHOENIX
Gila R.
Tucson
SANTA FE
NEW MEXICO
Canadian R.
OKLAHOMA CITY
Rio Grande
El Paso
Pecos R.
TEXAS
San Antonio
GULF OF CALIFORNIA
LOWER CALIFORNIA
Sierra Madre
C. San Lucas
PACIFIC OCEAN
MEXICO
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
30
20
110
Longitude West
100


90
80
70
Hudson Bay
Albany R.
CANADA
Lake of the Woods
Quebec
Ottawa R.
St. Lawrence R.
GREAT LAKES
LAKE SUPERIOR
Duluth
MAINE
AUGUSTA
Portland
MINNESOTA
WISCONSIN
MICHIGAN
LAKE HURON
OTTAWA
Mt. Marcy
MONTPELIER
VERMONT
NEW HAMPSHIRE
CONCORD
ST PAUL
Toronto
ONTARIO
NEW YORK
BOSTON
C. Cod
MASSACHUSETTS
Milwaukee
Detroit
Buffalo
ALBANY
RHODE ISLAND
PROVIDENCE
MADISON
LANSING
LAKE ERIE
Niagara R.
Hudson R.
New York
New York Bay
IOWA
Chicago
Toledo
Cleveland
PENNSYLVANIA
TRENTON
Philadelphia
DES MOINES
Peoria
OHIO
Pittsburg
COLUMBUS
HARRISBURG
NEW JERSEY
C. May
ILLINOIS
Wabash R.
Ohio R.
INDIANA
Baltimore
Delaware Bay
SPRINGFIELD
Cincinnati
WEST VIRGINIA
WASHINGTON
ANNAPOLIS
Kansas City
St. Louis
JEFFERSON CITY
Evansville
FRANKFORT
CHARLESTON
RICHMOND
Chesapeake Bay
Ozark Plateau
KENTUCKY
Louisville
Norfolk
Dismal Swamp
Cumberland R.
Tennessee R.
RALEIGH
C. Hatteras
NASHVILLE
NORTH CAROLINA
TENNESSEE
Charlotte
Memphis
Chattanooga
Wilmington
ARKANSAS
SOUTH CAROLINA
C. Fear
LITTLE ROCK
Mississippi R.
Tombigbee R.
ATLANTA
COLUMBIA
Birmingham
Charleston
Vicksburg
Meridian
MONTGOMERY
Savannah
JACKSON
Alabama R.
GEORGIA
Okefenokee Swamp
Mobile
BATON ROUGE
TALLAHASSEE
Jacksonville
Mobile Bay
New Orleans
Galveston Bay
Galveston
C. Canaveral
Tampa
GULF OF MEXICO
C. Sable
Key West
Florida Strait
BAHAMA ISLANDS
TROPIC OF CANCER
HAVANA
WEST INDIES
CUBA
Greenwich
90
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30
40

could the resistance of savage Indians or the opposition of other countries check the westward march of American civilization. The people multiplied, and their numbers were increased by a steady stream of immigrants from Europe. By purchase and by conquest one great tract after another has been added to our national domain, until now our country reaches across the continent from the Atlantic to the Pacific Ocean, and controls many islands beyond the seas.

The number of states has increased from thirteen to forty-eight, and in less than 150 years the United States has become the greatest power in the New World, and the equal of the greatest in the Old. Our flag is the symbol of our country's origin and its present greatness.

"Its stripes of alternate red and white proclaim the original union of thirteen states. Its stars of white on a field of blue constitute our national constellation, which receives a new star with every new state."

Questions

(Turn to the map, pages 2 and 3.)

1. Which states border the Gulf of Mexico? The Great Lakes? The Pacific Ocean?
2. Which states border on Canada? On Mexico?
3. Which states are east of the Mississippi River? Which states are west of this river?

Exercises

Write from memory the names of all the states.

Tell in which state each of these cities is located: New York, Boston, Providence, Philadelphia, Baltimore, Savannah, New Orleans, Galveston, Seattle, Portland, San Francisco, Los Angeles, Chicago, St. Louis, Buffalo, Detroit, Milwaukee, St. Paul, Cincinnati, Louisville, Minneapolis, Denver, Cleveland, and Pittsburgh.

CHAPTER I

SIZE AND SURROUNDINGS

The superiority of the United States is partly due to location. North America is directly west of Europe across the Atlantic Ocean. It is easily reached by the energetic English, Germans, and other European peoples, who naturally preferred to settle in a new land where the climate resembled their own. North America is also near Asia. Most of the land of the globe is north of the Equator. Europe, Asia, and North America are grouped around the North Pole, and lie closer together than the grand divisions of the Southern Hemisphere, which are widely separated by the oceans. Most of the important ports of the world are in the Northern Hemisphere, and the United States is near these ports.

North America is a great triangle, broad in the north and very narrow toward the south. The United States is in the middle of North America, in the choicest part of the North Temperate Zone.

Chiefly on account of its broad extent in temperate regions and its nearness to Europe and the other land north of the Equator, North America has outstripped South America in progress, although both grand divisions were discovered at about the same time.

The United States is not limited in area like Mexico and Central America; nor is the climate unfavorable as in Central America and large parts of Mexico and Canada. This double advantage of great area and genial climate has attracted immigrants to the United States, and has enabled this country to outgrow all her American neighbors.

Size. The area of the main body of the United States is more than three million square miles. Alaska in the northwestern part of North America belongs to the United States, and adds more than a half million square miles to its area. Including Alaska, the United States is almost as large as Canada, the largest country in the Western Hemisphere, and a little larger than Brazil, the largest country of South America. It is almost as large as Europe, and slightly larger than Australia.

The distance across the United States from the Atlantic to the Pacific Ocean is about three thousand miles. Its width from Canada on the north to the Gulf of Mexico on the south is about fifteen hundred miles.

Boundaries. The greatest of all the oceans, the Pacific, extends for about 1,500 miles along the western coast of the United States. The waves of the Atlantic Ocean break upon the eastern coast along a distance of about 2,000 miles. Along about half of our southern boundary

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Norman's Woe, near Gloucester, Massachusetts.

the warm waters of the Gulf of Mexico add more than 1,000 miles to the coast line. South of the western United States lies Mexico. The Rio Grande forms half of the boundary between the two countries; the western half of the boundary line has been surveyed and marked by setting up boundary stones several miles apart. A river is a natural boundary, but even there the exact boundary is the middle of the stream.

Boundary marker. Notice the names on the base.

The Dominion of Canada is north of the United States. Most of the boundary between the two countries is a land boundary. The western half of it follows the parallel of 49° north latitude. About one third of our northern boundary is the middle line in the Great Lakes and St. Lawrence River. From the St. Lawrence eastward to the Atlantic Ocean there is an irregular land and water boundary.

Coasts. The Atlantic coast of the United States is irregular and has many good harbors. Chief among them are Boston Harbor, an arm of Massachusetts Bay; New York Bay; Delaware Bay; and Chesapeake Bay. Upon these inlets are our four greatest sea ports: New York, Philadelphia, Boston, and Baltimore.

Other smaller but important ports share in the Atlantic trade. Farther north than Boston is Portland, Maine, on the picturesque Casco Bay. Norfolk, the greatest peanut market in the world, and Portsmouth, the seat of a great navy yard, are twin ports in Virginia at the mouth of Chesapeake Bay. Charleston, South Carolina, is a large port on the South Atlantic coast. Still farther south is Savannah, Georgia, near the mouth of the Savannah River.

New Orleans, Louisiana, on the Mississippi River, is the largest Gulf port. More bananas are landed there than at any other port in the United States. Galveston, Texas, ranks second as a Gulf port. It exports more cotton than any other port in the United States. It is on an island in Galveston Bay. Mobile, Alabama, is a Gulf port situated on Mobile Bay. Tampa, Florida, is the principal gateway of trade between the West Indies and the United States.

Along the Atlantic and Gulf coasts are many long, narrow sandy islands called beaches. The region around Cape Hatteras is noted for severe storms, much dreaded

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Golden Gate,

by sailors. The largest projection from the coast of the United States is the peninsula of Florida.

Off the southern point of Florida lies a chain of many small islands, none of which rise more than eight or ten feet above the surface of the sea. They are called the Florida Keys. "Key" is a Spanish word and means a low island. The largest of the Florida Keys is Key West. The city of Key West, upon this island, is the southernmost city in the United States.

The water from the Gulf of Mexico flows into the Atlantic Ocean through Florida Strait, forming a current known as the Gulf Stream. This river of warm water flows northward near the coast of the United States. As it advances it turns to the east and spreads out into a wide, slow drift, called the Westerly Drift, which finally reaches the coast of Europe.

The western coast of the United States has but two important indentations. Puget Sound is in the State of Washington, at the northwestern corner of the United States. San Francisco Bay is on the coast of California. It is a beautiful sheet of water, rimmed by hills and

San Francisco Bay.

having a narrow entrance called the Golden Gate. Seattle, upon Puget Sound, and San Francisco, upon San Francisco Bay, control most of the commerce of the United States on the Pacific Ocean. Other ports on our Pacific coast are San Diego, Los Angeles, and Portland.

Questions

1. In what direction is the United States from Canada? From Mexico? Central America? Europe? Asia? Africa? Australia? South America?
2. To which of these countries or continents must one travel from the United States by water? To which may one go by land?
3. What water separates Lower California from the mainland?
4. What large island is south of Florida?
5. What capes project from the Pacific coast of the United States?
6. Where is Cape Cod? What is its form?
7. What cape is at the mouth of Delaware Bay? What two capes are at the mouth of Chesapeake Bay? What cape at the southern end of Florida?
8. Where is Puget Sound? San Francisco Bay?

Exercises

Draw a map of North America. Mark the boundaries of the countries. Locate on the map the Rocky Mountains, Appalachian Mountains, Mississippi River, St. Lawrence River, Yukon River, Rio Grande, and the Great Lakes. Locate New York, Chicago, Philadelphia, Boston, San Francisco, St. Louis, Montreal, Quebec, Mexico, and Panama.

Draw from memory an outline map of the United States. Mark on it four harbors on the Pacific coast; eight on the Atlantic coast; four on the Gulf coast. Mark the cities, capes, and islands referred to in this chapter.

CHAPTER II

SURFACE OF THE UNITED STATES

Main Surface Divisions. The western third of the United States is part of the Cordilleran Highland of North America, which extends northward into Canada and Alaska and southward into Mexico. In the eastern part of the United States the Appalachian Highland extends from Canada to northern Georgia and Alabama. Between these two highlands lies the Great Central Plain of North America. The Atlantic Coast Plain lies between the Appalachian Highland and the Atlantic Ocean. There is a narrow strip of coastal plain along the Pacific Ocean in the southwestern part of the United States.

Atlantic Coast Plain. The Atlantic Coast Plain begins at Cape Cod and extends southward along the eastern coast of the United States. At its northern end it is only a few miles wide, but broadens to a width of more than 100 miles in the state of Georgia. It curves

Level farm land on the Atlantic Coast Plain.

EAST SIDE
WEST SIDE
SOUTH SIDE
DOMINION OF CANADA
ATLANTIC OCEAN
PACIFIC OCEAN
GULF OF MEXICO
GULF OF CALIFORNIA
CENTRAL PLAIN
ROCKY MT.
MT. HIGHLAND
Sierra Madre
C. Canaveral
C. Sable
C. Hatteras
500 miles
TROPIC OF CANCER
RELIEF MAP OF UNITED STATES

westward around the southern end of the Appalachian Mountains and merges with the Gulf Coast Plain.

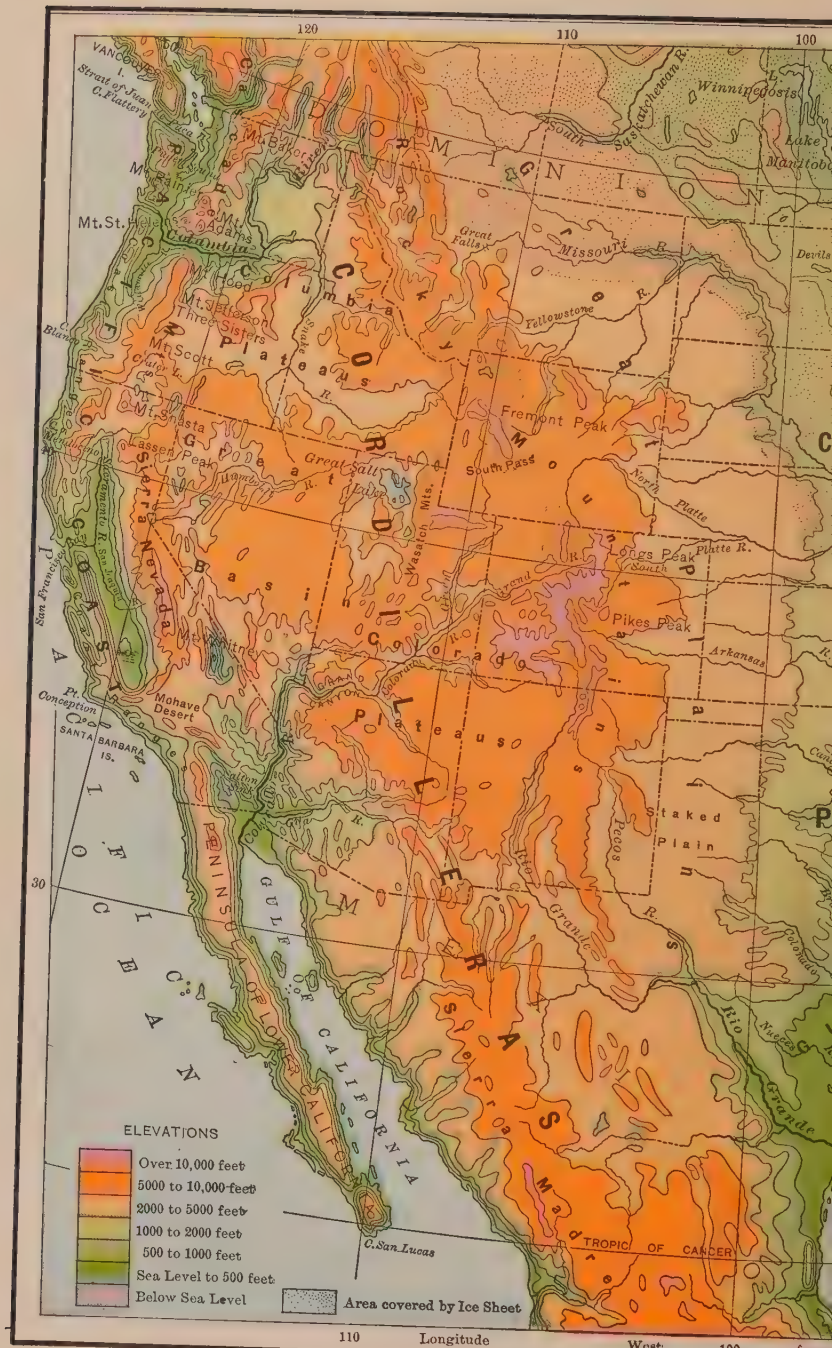
Appalachian Highland. The Appalachian Highland extends parallel with the Atlantic Ocean for about 1,500 miles, from Canada, south of the St. Lawrence River, through the United States to the states of Georgia and Alabama. North of the United States this region extends into Newfoundland. This highland consists of the Appalachian Mountains; the Piedmont Plateau, lying along the eastern side of the mountains; and the Appalachian Plateau on the western side. The mountains and the plateau region of New England belong to the Appalachian Highland.

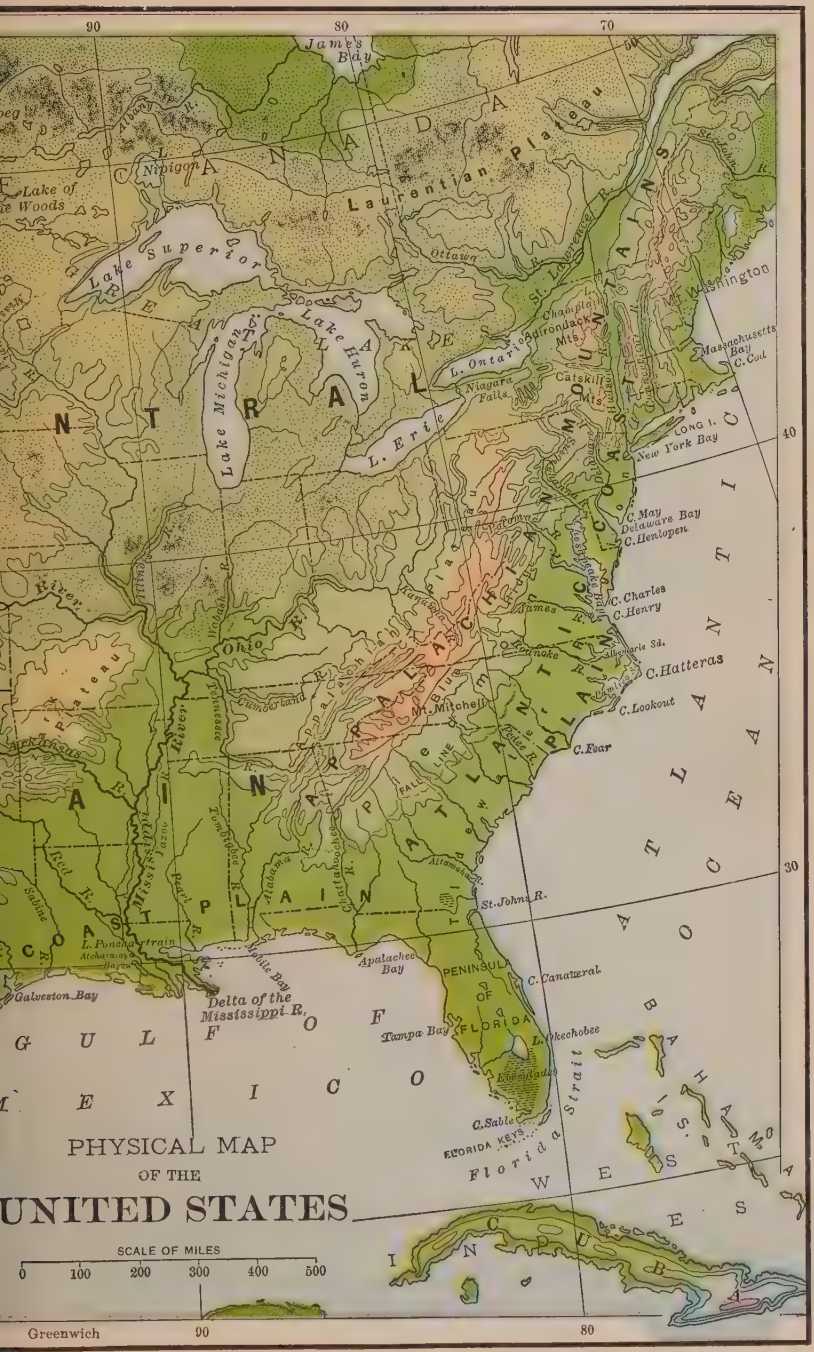
The easternmost ridge of the Appalachian Mountains is the Blue Ridge, which extends from Pennsylvania to Alabama. Mt. Mitchell, one of the peaks of the Blue Ridge, is the highest elevation (6,711 feet) east of the Mississippi River.

Piedmont Plateau. At the foot of the eastern slope of the Blue Ridge is the Piedmont Plateau. This belt of high, rolling country slopes down to the Atlantic Coast Plain. The Fall Line is the line where the plateau belt descends to the Coast Plain.

Catskill Mountains. The Catskill Mountains are the northeastern end of the Appalachian Plateau. They are famous for their scenery and legends. Here is laid the scene of Washington Irving's tale of Rip Van Winkle, who, according to the legend, slept in these mountains for twenty years, awaking in the early years of Washington's term as President of the United States. Many hotels accommodate the tourists who resort to these lovely mountains in summer.

Adirondack Mountains. North of the Catskill Mountains, in the state of New York, are the Adirondack Mountains. These mountains do not form a connected range, but


120
110
100
Mt. St. Helens
Mt. Adams
Mt. Hood
Mt. Jefferson
Three Sisters
Mt. Scott
Mt. Shasta
Lassen Peak
Mt. Whitney
Mt. Baker
Great Falls
Missouri R.
Yellowstone R.
Fremont Peak
South Pass
North Platte R.
South Platte R.
Pikes Peak
Arkansas R.
Great Salt Lake
Wasatch Mts.
Uinta Mts.
Mohave Desert
Pt. Conception
SANTA BARBARA Is.
Colorado R.
Pecos R.
Staked Plain
Rio Grande
Nueces R.
Granite Mts.
GULF OF LOWER CALIFORNIA
C. San Lucas
TROPIC OF CANCER
ELEVATIONS
Over 10,000 feet
5000 to 10,000 feet
2000 to 5000 feet
1000 to 2000 feet
500 to 1000 feet
Sea Level to 500 feet
Below Sea Level
Area covered by Ice Sheet
110
Longitude
West
100


90
80
70
James's Bay
Labrador Plateau
Laurentian Plateau
Lake of the Woods
Lake Superior
Lake Michigan
Lake Huron
L. Erie
L. Ontario
Ottawa
Niagara Falls
Adirondack Mts.
Catskill Mts.
Washington
Massachusetts Bay
C. Cod
LONG I.
New York Bay
40
C. May
Delaware Bay
C. Henlopen
C. Charles
C. Henry
James R.
Ohio R.
Alleghany Mts.
C. Hatteras
C. Lookout
C. Fear
Mt. Mitchell
Cumberland Plateau
Tennessee R.
Red R.
Arkansas R.
Missouri R.
Mississippi R.
Tombigbee R.
Alabama R.
Pearl R.
Black R.
Sabine R.
Fall Line
Altamaha R.
St. Johns R.
30
L. Pontchartrain
Atchafalaya Bayou
Galveston Bay
Delta of the Mississippi R.
Apalachee Bay
PENINSULA OF FLORIDA
C. Canaveral
Tampa Bay
L. Okeechobee
Everglades
C. Sable
FLORIDA KEYS
Strait of Florida
BAHAMA IS.
GULF OF MEXICO
ATLANTIC PLAIN
ATLANTIC OCEAN
WEST INDIES
CUBA
PHYSICAL MAP
OF THE
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
Greenwich
90
80

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John Brown's Grave, Adirondack Mountains.

consist of about one hundred separate peaks, the highest being Mt. Marcy (5,344 feet). The grave of John Brown, the Abolitionist, is on his old farm in the Adirondacks. The Adirondacks are noted for their wild beauty, the value of their lumber, the abundance of their fish and game, and their pure and healthful atmosphere. These attractions draw numerous visitors, and the region has become the site of hunting lodges, hotels, camps, and cabins, occupied chiefly in summer.

Great Central Plain. The Great Central Plain comprises the heart of our country. This region has the form of a shallow trough, more than a thousand miles wide. Along its lowest line the majestic Mississippi River flows from near Canada to the Gulf. On its eastern side the Central Plain is bounded by the Appalachian Plateau, and on its western side by the Rocky Mountains. The southern part of the Great Central Plain is called the Gulf

Coast Plain. This low, level plain borders the Gulf of Mexico, and sweeps northward along the Mississippi to the mouth of the Ohio.

Glacial Drift. Many ages ago the northeastern part of the United States was covered by an enormous glacier, or sheet of ice. It resembled the great glacier which now covers Greenland. The ice of the former glacier spread from the Hudson Bay region, Canada, as far

south as Long Island, the Ohio River, and the Missouri River. It gripped immense masses of rock, gravel, and soil in its frozen grasp, and with resistless force carried them forward. Traces of the passage of the glacier may be found in the scratches and furrows upon rocks made by the bowlders and stones which the glacier bore. These glacial marks run in a general southerly direction, showing the direction in which the glacier moved. The snow that fell upon the glacier gradually hardened into ice, and its great weight caused the ice sheet to move slowly outward from the central portion. The southern limit of the ice was the line at which the melting of the ice was equal to its forward movement. When the climate grew warmer the edge of the ice sheet moved northward, and finally withdrew from the United States and Canada.

After the ice had disappeared, the country over which it had passed was left covered with a layer of clay, sand,

A drumlin, Amherst, Massachusetts.

gravel, and bowlders that had been carried forward by the ice. This layer of rocky materials is called glacial drift. The surface was much smoother than it was before the Ice Age. Hills were planed down and valleys filled with the glacial drift. Most of the glaciated

Great Central Plain in North Dakota.

portion of the United States was left with a deep layer of drift, but the Hudson Bay country was left bare, for its soil had been carried away by the moving ice. In places the drift is piled into long, winding ridges called moraines. These morainic ridges mark the line where the ice front remained stationary for a long period. Oval or elongated hills of glacial drift are called drumlins.

All of New England, nearly all of New York, parts of New Jersey and Pennsylvania, and nearly all of the region north of the Ohio and Missouri rivers is covered with glacial drift. The glaciated portion of the Great Central Plain is the most extensive farming section of the United States. This part of the Great Central Plain is known as the Glacial Drift Plain. Most of the Drift Plain north of the Ohio was covered with dense forests. Illinois, and most of the region north of the Missouri, were formerly covered with tall grass, and these areas are called the Prairie Plains.

The highest parts of the Great Central Plain are

along the western side. The region nearest the Rockies is called the Great Plains. It is a high, nearly level region, sloping from about 5,000 feet above the sea at the base of the Rockies to 2,000 feet at the eastern edge of the plains. In the northern part of the Great Plains the Black Hills rise like a mountainous island above the plains. The highest peaks are over 7,000 feet above sea level. Along the southern side the Black Hills merge into the Bad Lands, so called because they are cut by gullies and ravines, which make travel difficult.

A view of the Bad Lands.

The southern part of the Great Plains is a plateau region that descends by a steep slope to the Gulf Coast Plain. It is called the Staked Plain. It is a dry and treeless region extending for 400 miles north and south, and for about 150 miles east and west.

In the Great Central Plain, south of the region covered by the glacier during the Ice Age, is the Ozark Plateau. It is old and much weathered like the Appalachian Highland, of which it is probably a detached portion.

It is much eroded by the action of streams. Along its southern border, ridges have been carved from the plateau, the softer rocks having been worn away and the harder and more resistant rocks being left. Throughout the plateau streams have cut deep gorges, often 500 or 1,000 feet in depth, at the bottom of which the streams wind their irregular courses. The plateau covers half of the state of Missouri and a part of Arkansas and Oklahoma.

Cordilleran Highland. The Cordilleran Highland region is an enormous platform upon which stand high mountain ranges. It is a thousand miles broad, extending from the Great Plains to the Pacific Ocean.

Upon the highest peaks of the Cordilleran Highland are fields of snow and glaciers.

Sperry Glacier, Rocky Mountains, Montana. Notice the terminal moraine.

The Cordilleran Highland is divided into three parts. The eastern part is the Rocky Mountains. West of the Rocky Mountains is a great plateau belt, made up of the Columbia Plateaus, the Great Basin, and the Colorado Plateaus. The western part of the Cordilleran region is made up of the Pacific Ranges and the great valley belt that is almost continuous from the Gulf of California to Puget Sound.

In Alaska there are active volcanoes. There are hundreds of slight earthquakes felt yearly along the Pacific coast. Some earthquakes are severe and do great damage. The most disastrous earthquake ever experienced in the United States partly destroyed the city of San Francisco in 1906. Many buildings were thrown down, many human lives were lost and enormous wealth was turned to smoke and ashes in the fire which followed.

Rocky Mountains. The Rocky Mountains are the longest and most extensive system of mountains in North America. The name is appropriate, for there are many naked rocks and precipices. Between the northern and the southern ranges of the Rockies is a plateau 7,000 or

Effects of an earthquake.

8,000 feet high. It slopes gradually upward from the Great Plains, and include the central part of the state of Wyoming. It is so nearly level that one may cross it from east to west and see no mountains. This natural opening in the mountain wall is the place where the first railroad was built across the Rocky Mountains.

The chief water parting in the United States,—that which separates the streams of the Great Central Plain from those flowing into the Pacific, follows the crests of the Rocky Mountains. Such a water parting is called a continental divide.

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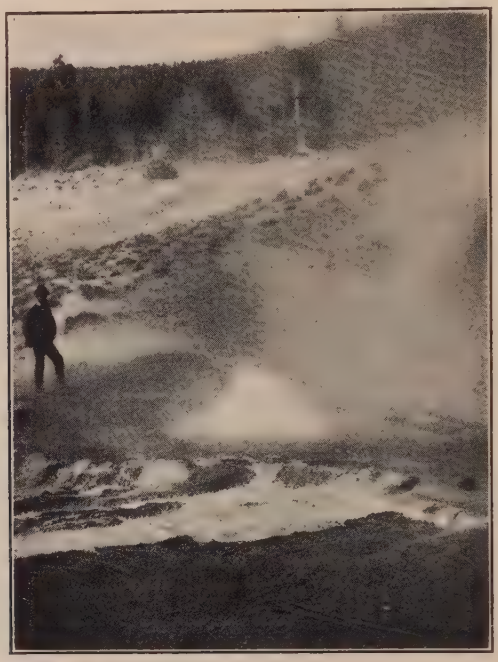
Continental Divide as seen from Yankee Doodle Lake, Colorado.

In the northern Rockies there are many wonderful examples of volcanic action. Springs of hot water abound. In some of them the steam forces the water to rise at intervals in high columns. These spouting springs are called geysers, from the name of a similar spring in Iceland. The section containing these springs

has been reserved by the government into a great public park "or pleasure ground for the benefit and enjoyment of the people," called the Yellowstone National Park.



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Beryl Spring, Yellowstone Park.

The southern ranges of the Rockies are higher and more irregular than those of the north. Hundreds of peaks rise more than ten thousand feet above the sea. The highest peak in the Rocky Mountains is Mt. Massive (14,424 feet), in the state of Colorado. Better known, though not so lofty as several other mountains, is Pikes Peak, near the city of Denver, Colorado. Overlooking the Great Plains, it rises more than 14,000 feet above sea level. The snow-covered summit is reached by a cogwheel railroad, and is visited by many tourists. The irregular ranges of the southern Rockies enclose

lofty mountain valleys of great extent. On account of their beautiful scenery and fine forests of pines and other trees, these valleys are called parks.

Pacific Ranges. The Pacific Ranges include the Sierra Nevada, the Cascade Mountains, and the Coast Ranges. Between the Coast Ranges and the Sierra Nevada is the Great Valley of California. Between the Coast Ranges and the Cascade Mountains is a belt of lowland occupied by the Willamette River and Puget Sound.

The Cascade Mountains are named from the cascades and rapids of the Columbia River where it breaks through the mountains on its way to the Pacific Ocean. They consist largely of volcanic material, and many of the peaks are extinct volcanoes. The two highest peaks are Mt. Rainer (14,408 feet), in Washington, and Mt. Hood (11,200 feet), in Oregon. Other high peaks are Mt. Baker, Mt. St. Helens, Mt. Adams, and Mt. Jefferson. The snowy summits of these peaks are the birthplaces of mountain glaciers.

The Sierra Nevada extend along the eastern border of California. "Sierra" means saw, and applies to the series of sharp peaks which jut into the clear California sky. "Nevada" means snowy. Mt. Whitney (14,800 feet), the highest peak in the main body of the United States, is in the southern part of this range. The scenery in the Sierra changes from snowy summits, great surfaces of polished rock and deep chasms to fine forests, lovely lakes, and peaceful meadows. The variety of scenes and the splendor of coloring make the Sierra Nevada unrivaled among the mountain regions of our country.

The most wonderful place in the Sierra Nevada is the Yosemite Valley, one of the deep glacial gorges on the western slope of the range. It is seven miles long, less than a mile wide, and almost a mile deep. The

granite walls are almost vertical, and rise in towering domes and cliffs from three thousand to five thousand feet above the bottom of the gorge. Streams flowing from the upper parts of the surrounding mountains, on reaching the edge of the cliffs, leap into space and disappear in mist. Such is the noted Bridal Veil Fall, 900

Yosemite Falls, Yosemite National Park.

feet high. The great Yosemite Fall, 2,600 feet high, is the highest waterfall in the world. No place on earth can equal the Yosemite Valley for the number and height of its perpendicular falls and the massive grandeur of its crags and precipices. Like Yellowstone Park, this valley and the country around it have been set aside for the use of the public as a national park.

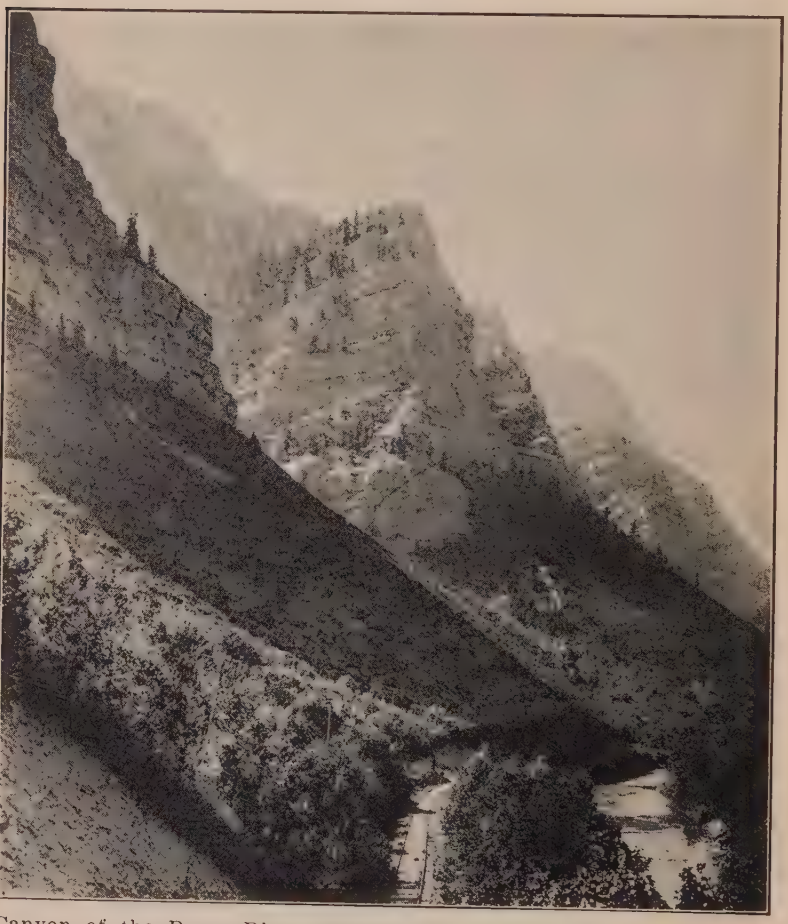
The Coast Ranges extend all along the Pacific coast of the United States. There is only a very narrow coastal plain along the coast, and in many places the mountains reach to the very ocean. Their summits are not so high as those of the Cascades or Sierra Nevada. Through the sinking of the coast a long drowned valley now appears as Puget Sound. Another drowned valley forms San Francisco Bay.

The Interior Plateaus. Shut in between the Sierra Nevada and Cascade Ranges on the west and the Rocky Mountain system on the east is the plateau belt of the Cordilleran Highland. It is divided into three parts: the Columbia Plateaus in the north, along the Canadian border; the Colorado Plateaus in the south, adjoining Mexico; and the Great Basin which lies between these plateaus and is divided from the Colorado Plateaus by the Wasatch Mountains.

Although mostly a plateau of enormous area, the Great Basin is so called because it is surrounded by the higher parts of the Cordilleran Highland, and is a region that has no outlet to the sea. The southern end of the Great Basin is Death Valley, a region below sea level. The Great Basin has many narrow mountain ranges with sharp slopes, separated by broad desert valleys. Soil, eroded from the Basin ranges, and carried by wind and floods, has almost filled the intervening valleys; and so these ranges are partly-buried mountains.

Death Valley is so called because in 1849, the year

following the discovery of gold in California, a party of emigrants perished there of starvation and thirst. It is a long, narrow valley, the lowest part being three or four hundred feet below sea level. In this valley there are great deposits of salt borax and nitrate of soda. These minerals were deposited there by a lake which has since dried up. They have been preserved in the soil because of the absence of rain.



Canyon of the Provo River, Wasatch Mountains. These mountains, overlooking the Great Basin, are high enough to have considerable rainfall.

The Columbia Plateaus are a high, level region, formed largely of sheets of lava, which have buried the valleys and mountains of an earlier age. These sheets of lava have been deeply cut by streams.

The Colorado Plateaus are southeast of the Great Basin. Much of the surface is remarkably level, although in places it is broken by great cliffs, deep canyons, and volcanic mountains. The most important feature of the Colorado Plateaus is the Grand Canyon of the Colorado. In this part of its valley the river has cut a canyon a mile deep through solid rock. The tumult of color and riot of form along the sides of the canyon make this region one of the marvels of the earth. San Francisco Mountain (12,700 feet), an extinct volcano in northern Arizona, is the highest peak of the Colorado Plateaus.

Questions

(Turn to the map, pages 14 and 15.)

1. Which regions of the United States are below sea level?
2. On which slope of the Appalachian Highland is the Piedmont Plateau? On which slope is the Appalachian Plateau?
3. Which is the highest peak east of the Mississippi River? Where is Mt. Washington? Mt. Marcy?
4. In about what longitude is the eastern part of the Great Plains?
5. What are some of the chief peaks of the Rocky Mountains? Of the Cascade Mountains? Sierra Nevada?
6. What are the three divisions of the plateau belt west of the Rocky Mountains?
7. What mountains lie close to the Pacific coast?

Exercises

On an outline map of the United States shade the Appalachian Highland lightly, and the Cordilleras heavily. Mark the mountain ranges, plateaus, peaks, and the plains, with their names.

CHAPTER III

RIVERS AND LAKES

Drainage Slopes of the United States. A small part of the northern United States is drained northward through the Red River into the Nelson-Saskatchewan River of Canada and thence into Hudson Bay. Some small streams of the Great Central Plain flow into the Great Lakes. Most of the southern slope of the Great Central Plain, however, is drained by the Mississippi and other rivers which flow into the Gulf of Mexico. The western slope of the Cordilleran Highland is drained by rivers that flow into the Pacific Ocean. In this Highland there are a number of small basins that have no outlet to the ocean, chiefly because they have so little rainfall. The Atlantic Ocean receives the waters of the St. Lawrence River system, including the Great Lakes, and of many smaller but important rivers farther south that drain the Appalachian Highland and the Atlantic Coast Plain.

Rivers

The Mississippi River flows southward across the United States. It rises close to a tributary of the north-flowing Red River. Its sources are in a group of small glacial lakes in the northern part of the state of Minnesota. It flows out of Lake Itasca as a small stream, but gathers water rapidly from many tributaries. With the main stream they form one of the grandest river systems in the world and drain one third of the United States. Of the tributaries the Missouri is the longest. The distance

from the source of the Missouri River to the Mississippi and thence to the Gulf of Mexico is 4,200 miles. Nowhere else in the world is there so long a stream of fresh water. The Mississippi from Lake Itasca to the Gulf of Mexico is 2,600 miles long. To the mouth of the Ohio River it flows through the region covered by the great Ice Sheet. It then flows through the Gulf Coast Plain. "Mississippi" is an Indian word meaning "Great Water." The lower Mississippi was discovered in 1541

Statue of De Soto, St. Louis.

by the Spanish explorer, De Soto. De Soto died during the expedition. His followers placed his body in the hollow trunk of a tree and sank the rude coffin beneath the waters of the mighty river. More than a century afterward two Frenchmen, Joliet, a fur trader, and Father Marquette, a missionary, made their way in a canoe from the upper course of the Mississippi to the mouth of the Arkansas River. La Salle, another French-

man, was the first white man to journey down the Mississippi to its mouth.

Along its upper course, the Mississippi has many rapids and falls that furnish water power. The most famous are the Falls of St. Anthony in Minnesota, which furnish power for the flour mills of Minneapolis; and the Des Moines rapids at Keokuk which furnish a vast amount of power for St. Louis and other cities.

Along the upper Mississippi the bluffs are several hundred feet high and the bottom lands are narrow. Along the lower Mississippi the bluffs are about 100 to 200 feet high, disappearing as one approaches the mouth of the river. They are farther apart than along the upper course, the flood plain between them ranging from 25 to 80 miles in width. There are many bridges across the upper Mississippi, but only a few across the lower part.

Formation of an oxbow bend and lake.

The lower Mississippi winds through its valley in long curves called meanders. Some obstruction, as a tree lodged on the shore, may cause a river to make a slight bend (1). The more rapid current flows against the outside of the curve and washes away the bank, thus increasing the bend. At the inside of the bend the current is slower and sediment is deposited there (2). These meanders increase until they take the form of oxbow bends (3). Finally in a flood the river cuts a new channel across the narrow neck of land between the bend

(4), which becomes the main channel. The ends of the old channel fill with sediment and the abandoned part of the channel becomes an oxbow lake. The distance in a direct line from the mouth of the Ohio to the mouth of the Mississippi is 560 miles, but on account of its irregular course the river between these points is twice as long.

Embankments, called levees, have been built along the lower Mississippi wherever the banks are low. There are about 1,500 miles of levees along the Mississippi River. After very heavy rains, and in the spring, when the snow melts, the river is unusually high. The Mississippi can carry off the flood waters of one great tributary, but when two or three of them pour their spring or summer floods into the central stream it rises far above its usual height and overflows its banks. Then the levees are watched with anxiety and constantly mended, for a little leak grows with incredible rapidity and

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Protecting a levee by facing it with a raft of woven willows.

threatens ruin to the adjoining villages and farms. The country for miles may be deluged. Villages are destroyed, farm buildings and trees swept away, horses and cattle drowned and human lives lost. Sometimes whole fields are dug away, and the owners lose not only houses, crops, and live stock, but their land as well.

The government of the United States, which built the levees at great cost, spends large sums every year to keep them in repair.

The enormous quantities of fine mud, called silt, which the Mississippi River receives from its tributaries and wears from its own banks, are at length brought to the Gulf of Mexico. Here they are deposited at the mouth of the river as bars, which unite and form a low, fertile plain, barely higher than the level of the sea. Through this plain the Mississippi washes its way by numerous channels, called passes, which distribute its waters to

A jetty at the mouth of the Mississippi.

the Gulf of Mexico. Such a tract of land formed of sediment at the mouth of a river is called a delta.

To enable large ocean vessels to reach the city of New

Orleans two of the passes, Southwest Pass and South Pass, have been narrowed and lengthened by building walls, called jetties, of stone and other material topped with concrete. By confining the water within a narrower channel the current is made powerful enough to wash away the bar at the mouth of the pass and scour a channel 200 or 300 feet wide and 30 to 35 feet deep.

The government of the United States, which built and maintains the jetties, also keeps great dredges at work digging away bars and other obstructions from the channel of the Mississippi.

Above Minneapolis the river is navigable only for small boats and is used mostly for floating down great rafts of logs from the lumber regions.

The Missouri River. From its source at a heigth of 8,000 feet in the Rocky Mountains near Yellowstone National Park to its junction with the Mississippi the Missouri is about 3,000 miles long.

It drains a greater area than any of the other branches, but it brings relatively little water into the Mississippi, because it flows through a region of little rainfall.

At Great Falls, in the state of Montana, the river descends over a number of falls, one of which has a descent of 87 feet. The town of Great Falls nearby gets power from these falls for its electric light plant and its street railways. Below the falls the current is slow and the river has meanders and oxbow lakes. Its bed is obstructed by the trunks and roots of fallen trees, and by bars and islands. When floods increase its depth, the river is navigable almost to Great Falls. The melting of snow on the Great Plains in spring is followed by the melting of snow in the mountains, so that deep water lasts until midsummer. No other branch of the Mississippi brings down so much silt as the Missouri. The

Indians observed this and named the river "Missouri," meaning "muddy water."

The Yellowstone River is a branch of the Missouri. In Yellowstone Park it forms a magnificent lake. After leaving Yellowstone Lake it falls over high cliffs and enters the "Grand Canyon," a gorge 24 miles long.

The layers of rock at the sides of the gorge are colored bright red, yellow, and purple and contrast beautifully with the somber green of the pine trees and white

Yellowstone Falls, Yellowstone National Park.

foam of the cataracts and rapids. Many hot springs and geysers drain into the Yellowstone.

The Arkansas River rises at an elevation of over ten thousand feet. At first it is a mountain torrent flowing down the eastern slope of the Rocky Mountains. Then it

flows through the Royal Gorge, a canyon which it has cut through a plateau. The sand and silt which it washes from the mountains are deposited along its lower course, where the current is slow. The Arkansas River has frequent floods. At times the river is more than 20 feet deep, and at other times there is only a foot or two of water. There is a fringe of swamps along the river, interspersed with rich bottom land.

Steamers can navigate the Arkansas River in all seasons of the year for about 100 miles west of its mouth, to Pine Bluff. They connect that city with Memphis, St. Louis, and New Orleans.

The Red River rises in the Staked Plain at an elevation

Royal Gorge, Grand Canyon of the Arkansas, Colorado.

of about 2,500 feet. Near the abrupt eastern edge of the Staked Plain it plunges into a canyon 500 feet deep. The entire upper course is through a very dry region.

The lower course is winding. Its waters are discolored by red mud which gives the river its name. It flows partly into the Mississippi River and partly into the Atchafalaya Bayou, which carries some of the water of the Mississippi and Red rivers through the low, swampy bottoms west of the Mississippi and discharges it into the Gulf.

The Red River is subject to sudden and severe floods. The United States has built and maintains levees, and closed the outlets through which the waters drain off into the adjacent swamps. The channel is thus made deep enough for vessels of shallow draft.

The Ohio River is the one great branch which flows into the Mississippi from the east. It is formed on the western slope of the Appalachian Mountains by two rivers, the Monongahela and the Allegheny. The Monongahela

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Canal leading around rapids of the Ohio, Louisville, Kentucky.

River flows north and the Allegheny south. They meet in western Pennsylvania. At the junction is located the city of Pittsburgh. Like the two streams which form it, the Ohio bears an Indian name.

The Ohio River pours more water into the Mississippi than any one of the three great western tributaries. It flows through a narrow valley which, like the Missouri on the west, marks approximately the southern limit of the great ice sheet. The Ohio is comparatively free from falls. The most important rapids are less than 25 feet high. On the south bank of the river, beside these rapids, is located the city of Louisville, Kentucky.

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Flood at Dayton, Ohio.

The Ohio is subject to floods in the spring, when freshets from its northern and southern branches cause the river to rise from 25 to 50 feet above its usual level. The floods cause much damage to farms and parts of cities on the alluvial plain. The lowlands near the mouth are protected by levees. The government of the United

States has built dams to deepen the water and thus make the river navigable even in dry seasons.

The Ohio River has a prominent place in the history of our country. George Washington, when a young man, made a famous journey through the forest to the French fort, on the present site of Pittsburgh. Afterward he accompanied the British General Braddock, who was killed in an attempt to capture the fort. For many years the Ohio River, with Mason and Dixon's Line between Pennsylvania and Maryland, was the dividing line between the slave states and the free states. Before the construction of railroads the Ohio was the natural highway for pioneers on their way to the forests and prairies west of the Alleghenies. Abraham Lincoln was but one of many great men who in their boyhood toiled upon the great flatboats which carried lumber and other products down the Ohio and Mississippi rivers.

Questions

1. What are the chief branches of the Mississippi?
2. Which come from the west? Which from the east? Which is the longest? Which brings most water into the Mississippi?
3. Which tributaries of the Mississippi carry much sediment?
4. What causes floods in the Mississippi Valley?
5. Which rivers unite to form the Ohio?

The Rio Grande (*Great River*) is, next to the Mississippi, the longest river which flows into the Gulf of Mexico. It rises in the Rocky Mountains of the United States, and flows southeast. Near its headwaters, 12,000 feet above the sea, it is first a mountain torrent and then flows through canyons which it has eroded. Before it leaves New Mexico it enters upon the second part of its course, becoming a sluggish stream choked with

sand and silt. This lower course lies through the prairies and low Gulf Coast Plain. This part of the river is marked by meanders and many deposits of silt from its mountainous upper course. They obstruct the river so that it is of little importance for navigation.

The Rio Grande is about 2,200 miles long and for 1,300 miles, from the city of El Paso, Texas, to the Gulf of Mexico, it forms the international boundary between Mexico and the United States. The upper part of the river is tapped at many places and its scanty water supply is drawn off to irrigate the land of the almost rainless territory through which it passes.

Between the city of El Paso, in the United States, and the opposite city, Ciudad Juarez, on the Mexican side, the Rio Grande is spanned by several bridges. There are bridges at Laredo also.

The bars which obstruct the lower river prevent ocean-going vessels, except those of small size, from ascending the river even to Matamoros, in Mexico, opposite Brownsville, Texas. These ports are about 25 miles from the mouth of the Rio Grande.

The numerous rivers of the Atlantic Coast Plain are shorter than those of the Great Central Plain. On account of the importance of the region through which they flow, their navigability, and their influence upon the history and growth of our country, these rivers equal in commercial and industrial importance the larger streams of other sections.

St. Lawrence River. The St. Lawrence is the outlet of the Great Lakes and one of the greatest rivers in the world. Ocean steamers ascend the St. Lawrence to the great Canadian seaports, Quebec and Montreal. But both these cities are ice-bound for five months in the year. Then part of their traffic turns to Portland, Maine and Boston, Massachusetts, which have open harbors

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St. Lawrence River.

throughout the winter. Most of the important tributaries of the St. Lawrence come from the north, so that, although the United States owns more than half of the Great Lakes, about two thirds of the basin of the St. Lawrence belongs to Canada. From its source in Lake Ontario to the point where it crosses the parallel of 45° north latitude, it is the boundary between Canada and the United States.

The Connecticut River rises in Connecticut Lake near the Canadian border, and flows south for about 350 miles into Long Island Sound. In its upper course it flows between wooded banks and over a rocky bed. Its lower course is marked by broad alluvial bottoms, forming the fertile Connecticut valley, a rich and thickly populated farming region.

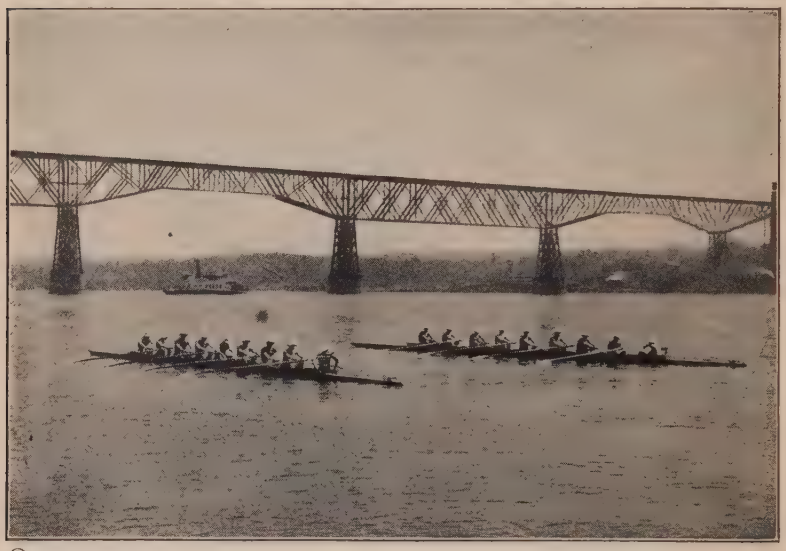
The Hudson River, although only about three hundred miles long, is one of the most important waterways in the United States. It is also one of our most beautiful streams. It rises in the wildest part of the Adirondack

Mountains in northern New York State, and receives the water of many mountain lakes and small streams. This part of the Hudson has rapids and falls, some of which have considerable height and great beauty. At Glens Falls there is a descent of 50 feet. Between this place and Troy there are falls and rapids which furnish power for busy factories and mills.

The river is navigable for 150 miles to Troy, at the head of tidewater. The lower course flows through a gorge-like valley with mountainous banks. It is an arm of the sea occupying a sunken valley and not a true river. For miles the Hudson flows between picturesque and mountainous banks called the Highlands. The western bank of the lower river is a ridge 300 to 500 feet high of hard lava rock, or basalt, called "trap rock." On account of its rudely jointed columns it is called the Palisades. At Tarrytown, on the eastern bank, a monument marks the spot where Major Andre, the British spy, was captured during the Revolution. Here too is Sunnyside, the cottage where Washington Irving lived. The charm of Irving's stories of Sleepy Hollow, of

Northern end of the Palisades, New Jersey.

Ichabod Crane and of the Headless Horseman is inseparable from this part of the Hudson valley, as his story of Rip Van Winkle is part of the charm of the Highlands of the Hudson and the adjacent Catskill Mountains. At the mouth of the Hudson several rocky islands, the crests of sunken hills, rise above the water. The most important is Manhattan Island, part of the city of New York.



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Poughkeepsie Bridge across the Hudson.

The Hudson was named for Henry Hudson who explored the river in 1609 and established the claim of the Dutch to the surrounding region as far up the river as Albany. Upon the Hudson, Robert Fulton launched his successful steamboat, the Clermont, which plied between New York and Albany.

The most southern bridge across the Hudson is at Poughkeepsie. Three railroad tunnels under the river join the city of New York with New Jersey.

The chief tributary of the Hudson is the Mohawk River, which rises near Lake Ontario and makes its way eastward to the Hudson through a valley between the Catskills and the Adirondacks. This is the lowest and therefore the most useful of the many Appalachian gaps which connect the Great Central Plain and the Atlantic Coast Plain.

The Delaware River is more than 350 miles long. At Delaware Water Gap it cuts across the Kittatinny Mountains. The scenery along the upper Delaware is exquisite. High banks, heavily wooded, alternate with peaceful and fertile farmland. The upper part of the river has numerous rapids which afford water power. At Trenton, New Jersey, the Delaware crosses the Fall Line in passing from the Piedmont Plateau to the Atlantic Coast Plain. At this point are rapids. The lower Delaware and Delaware Bay, like the lower Hudson, form an estuary. The importance of Philadelphia is largely due to its location on the Delaware.

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Delaware Water Gap.

The Susquehanna River is a wide and stately stream about 400 miles long, but shallow, with many windings and numerous islands. Its east branch flows through the famed Wyoming valley, a region rich in timber and

Susquehanna River and Valley. The weirs in the river are to catch fish.

minerals and in glorious scenery. Here was the scene of a bloody massacre during the Revolution. Campbell's poem, "Gertrude of Wyoming," is based on this event.

The Potomac River is about 450 miles long. It rises in the Allegheny Mountains and flows into Chesapeake Bay. At Harpers Ferry it flows through the Blue Ridge in a gap of great scenic beauty. The Fall Line where the Potomac leaves the Piedmont belt and enters the Atlantic Coast Plain is near the city of Washington. Here there are rapids and cataracts.

On the Potomac River are located Washington, the capital of the United States; Mount Vernon, the residence of George Washington; Arlington, the site of a great national cemetery; and many other places con-

nected with the history of our country. Below Washington the Potomac is really an arm of Chesapeake Bay.

The James River is about 400 miles long. Richmond, at the Fall Line, has fine water power, the river descending one hundred feet in a distance of a few miles. The lower

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Falls of the James River, Richmond, Virginia.

course is a broad and majestic estuary. On what was formerly a peninsula and is now an island in the river, Jamestown, the first permanent settlement in the United States, was established by Captain John Smith in 1607.

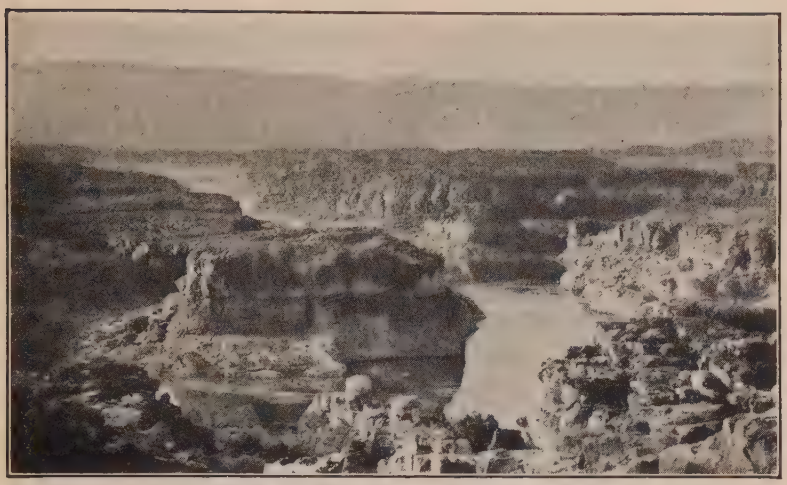
The Savannah River is 450 miles long. Augusta is at the Fall Line, 231 miles from the mouth. This is the head of navigation for small craft. Savannah, a leading seaport of the South, is situated on this river.

The St. Johns River is a wide, deep stream in Florida. Ocean steamers sail on this waterway to Jacksonville, which is about 20 miles from the Atlantic.

Questions

1. What large river flows into the Gulf of Mexico west of the mouth of the Mississippi?
2. In what direction does the land slope from Lake Ontario to the Gulf of St. Lawrence? How can you tell?
3. What climatic condition lessens the commercial importance of the St. Lawrence River?
4. How do vessels pass from Lake Ontario to Lake Erie?
5. Which rivers, wholly in the United States, flow directly into the Atlantic Ocean? Which of these have estuaries? What is an estuary?

The Columbia River is the longest river of the United States proper that flows directly into the Pacific Ocean. In its southern course it flows through the Columbia Plateaus. Here it has eroded steep and rugged canyons in the basalt, or hard lava rock. At places the black walls of the canyons rise one thousand feet above the river. In many places the course of the Columbia is broken by rapids and falls which add to the wild and picturesque beauty of the scenery, but hinder its usefulness for navigation. The last of the obstructions are the Cascades at the place where the river crosses the Cascade Mountains. Here the river descends about 300 feet through a short gorge from 2,000 to 4,000 feet deep. From the sea to the Cascades, a distance of 160 miles, the Columbia is navigable. By means of a canal, boats pass the Cascades and continue fifty miles farther east up the stream to a series of falls and rapids called the Dalles. Above this point the river is again navigable. The broad mouth of the Columbia affords an ample and secure haven for ships. It is the only fresh water harbor on the Pacific coast of the United States, and the only safe harbor between Puget Sound and San Francisco Bay. The Columbia has a full and even flow of water, and is not subject to floods.



The Dalles, Columbia River, Oregon.

The Columbia River was named from the ship, "Columbia" in which Captain Robert Gray, of Boston, at the close of the 18th century, sailed into the river. He claimed the surrounding country for the United States.

The Snake River, nearly a thousand miles long, is the largest tributary of the Columbia. For about one hundred and fifty miles above its junction with the Columbia it is navigable for small steamers.

The Willamette River is navigable from its mouth to the great city of Portland, Oregon, 15 miles above its junction with the Columbia River. Above Portland there are falls 40 feet high at Oregon City. By means of a canal small steamboats pass these falls and ascend a hundred miles farther south to Eugene.

The Sacramento and San Joaquin rivers drain the Great Valley of California. The northern part of the valley is drained by the Sacramento, a stream about 400 miles long. The San Joaquin River drains the southern part. These rivers chiefly drain the eastern mountains, receiving but little drainage from the Coast Ranges. They

San Joaquin River, California.

unite to form a single stream which flows into San Francisco Bay.

The Colorado River is formed by the union of the Grand and Green rivers, in Utah, east of the Wasatch Mountains. The Green River rises in Wyoming, south of Yellowstone Park and near the sources of the Snake and Yellowstone rivers.

The valley of the Colorado River exhibits the most remarkable examples of erosion by water in the world. The river flows through canyons thousands of feet deep. The Grand Canyon is from four to twenty miles wide at the top, over 200 miles long, and about a mile deep. Gulleys and gorges branch off from each side like "a thousand Yosemites."

After leaving the Colorado Plateaus, the Colorado River flows through a desert lowland. Here the current is slow, and the sediment brought down from the plateau forms bars, making navigation difficult. The Colorado is navigable for about 550 miles above its mouth.

Grand Canyon of the Colorado. This deep, narrow valley has been carved out of the solid rock by the river. Notice the horizontal layers of rock at the sides of the canyon. Compare the depth of this colossal gorge with the size of the man sitting on the brink.

The Gila River is the chief tributary of the lower course of the Colorado.

The Great Basin has no important rivers. In most parts of this section the rainfall is not enough to keep water in the streams. The air is dry and the water of the streams evaporates rapidly. The rivers flow into hollows and form interior drainage systems, with no outlet to the sea.

The largest of these inland rivers is the **Humboldt River** in the state of Nevada. It follows a winding course southwestward for about 300 miles, and ends in Humboldt Lake. Similar smaller streams are found throughout the Great Basin.

Questions

1. Which rivers flow into the Pacific Ocean?
2. Which rivers rise near Pikes Peak? Into what water does each flow?
3. Which three rivers rise near Yellowstone Park? Into what water does each flow?
4. Why are there no large rivers in the Great Basin?
5. Which rivers drain the Great Valley of California?
6. How was the Grand Canyon formed?

Exercises

On a physical map of the United States draw the principal rivers.

Trace two routes from Chicago to the Atlantic Ocean.

Trace two routes from the Adirondacks to the Atlantic Ocean.

Collect pictures and printed descriptions of the Grand Canyon of the Colorado.

Lakes

North America, like the other grand divisions of the Northern Hemisphere, has many lakes. Most of them are in Canada and the northern United States. They range in size from the Great Lakes to tiny ponds.

Glacial Lakes. By far the greater number are glacial lakes, strung like jewels upon our northern streams. The irregular deposit of glacial drift by the ice sheets during the Ice Age dammed many of the valleys and formed natural reservoirs into which the water collected, thus forming lakes.

There are more than a thousand glacial lakes in New York and Maine, more than two thousand in Wisconsin and Minnesota, and hundreds in other northern states. Situated in the hills, often surrounded by forests and dotted by wooded islets, these lakes and ponds give variety and beauty to our northern states. Many of them are popular summer resorts.

Lake Champlain. Between the Adirondack Mountains and the Green Mountains lies Lake Champlain. It occu-

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Kaaterskill Lakes, Catskill Mountains, New York.

pies a narrow valley more than 100 miles long and from half a mile to ten miles wide. The irregular and mountainous shores are beautiful. From the south, Lake George, about one fourth as long as Lake Champlain, flows into it through Ticonderoga Creek. Nowhere is there more charming scenery than that afforded by the

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Southern end of Lake George.

placid green water, reflecting the white birch and other trees of the rocky islands and mountainous shores of Lake George. Lake Champlain and Lake George, with the Hudson River, are a natural avenue leading from Canada into the United States. This route was much traveled by the Indians, and contending armies used it during the French and Indian War as well as during the Revolution. The region has been the scene of stirring events which are recorded in American history, in Indian legends, and in Cooper's novels.

The Great Lakes. The Great Lakes are a chain of five lakes, connected by short rivers. The Great Lakes

contain thousands of islands. Lake Superior is the largest, highest and most western; Lake Ontario is the lowest, most eastern, and smallest. The lakes lie at different levels. The St. Mary River carries the water of Lake Superior into Lake Huron. The Strait of Mackinac connects Lake Michigan with Lake Huron. Lake Huron flows into Lake Erie through the narrow waterway consisting of the St. Clair River, St. Clair Lake, and the Detroit River. Lake Ontario lies much lower than Lake Erie. The water from Lake Erie flows through the Niagara River and leaps over a precipice 161 feet high, after which it descends still farther in rapids through a narrow, rocky gorge.

Niagara Falls are visited by hundreds of thousands of tourists. The spectator is thrilled by their beauty and ponderous power. The ground is wet from the spray that falls like rain around the Falls. In the sunlight

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Niagara Falls.

rainbows arch the light green water and white foam. The water falling from so great a height goes down deep into a pool which it has dug at the foot of the Falls. The surface of the pool is so calm that little steamboats carry passengers close to the falling water. An electric railway patronized by tourists circles the gorge. It follows the top of the bank on the Canadian side, and returns along the water's edge on the American side.

Vessels pass from Lake Erie to Lake Ontario through the Welland Canal in Canada. Much less water passes over the Falls than formerly, because a large amount is drawn off above the Falls to provide power for manufacturing.

Marshy Lakes. The Dismal Swamp lies in Virginia and North Carolina. It is about 30 miles long and 10 miles wide. Lake Drummond is in the midst of the swamp and a canal connecting Chesapeake Bay with Albemarle Sound passes through it. The swamp has been partly drained. Farther south, in the state of Georgia, Okefenokee Swamp covers a much larger area. It is drained by the St. Mary River.

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A cypress swamp.

In Florida there is a shallow marshy lake called the Everglades. It is about as large as Lake Ontario. It is fed by springs, is very shallow, has many low, marshy islands, and its waters are filled with tall grasses. Several small streams flow out of it to both the Atlantic

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Everglades and drainage canal, Florida.

Ocean and the Gulf of Mexico. Much of it is being reclaimed by drainage canals.

The principal lagoon along the Gulf of Mexico is Lake Pontchartrain near New Orleans. It is a landlocked bay of salt water, connected with the Gulf by a narrow, sluggish bayou or pass.

Salt Lakes. The largest lake in the Cordilleran Highland is Great Salt Lake, 12 miles from Salt Lake City. It receives the drainage from the west slope of the Wasatch Mountains. Ages ago an immense lake covered this region to a depth of 1,000 feet. It gradually evaporated, leaving marks of its former size on the shore lines which can be traced high up the mountain sides.

Great Salt Lake and a few smaller lakes contain what is left of Lake Bonneville, as this ancient lake has been called. Great Salt Lake has no outlet. There is an

Great Salt Lake, Utah.

abundance of salt and similar minerals in the earth, and large quantities of it are dissolved by the streams and washed into Great Salt Lake, which is consequently filled not with fresh water but with strong brine. The human body cannot sink in it, and bathers find sport in trying to immerse themselves.

There are smaller lakes scattered throughout the Great Basin, all of them resembling Great Salt Lake. They receive the waters of streams that cannot make their way to the ocean, and they are usually so salt that even cattle cannot drink from them. Some streams gradually evaporate and end in "sinks," so called because the waters appears to sink into the ground. Some lakes partly dry up and form mud lakes. Others evaporate

entirely, sometimes leaving a white, glistening crust of salt, borax, soda, and other minerals. Among the larger lakes of the Great Basin are Humboldt Lake, Carson Lake, Walker Lake, and Pyramid Lake.

Devil Lake, in North Dakota, is a salt lake. It receives the drainage of a small basin between the tributaries of the Missouri River and those of the Nelson-Saskatchewan River.

Tulare Lake, in California, like a few other lakes, receives tributaries from the Sierra Nevada. It has no outlet, except in the rainy season, when it overflows into the San Joaquin River.

Mountain Lakes. Lake Tahoe is on the boundary between California and Nevada. It is 6,000 feet high on the eastern slope of the Sierra Nevada amid picturesque scenery, and is over 1,600 feet deep. Yellowstone Lake, in the Yellowstone National Park, is another beautiful mountain lake.

Crater Lake is a small lake in the Cascade Mountains

Lake Tahoe.

in Oregon. It fills the crater of an extinct volcano. The crater caved in, leaving the mountain sides rising 2,000 feet above the lake, whose depth is about equal to the surrounding precipices. It has no outlet and never freezes, yet the water is fresh. In the same section are the beautiful Klamath Lakes, named for the Indian tribe that lives near them. These lakes are drained by the Klamath River, which flows into the Pacific Ocean.

Questions

1. Which of the Great Lakes is farthest north? Which is farthest west? Which farthest east? Which extends farthest south?
2. Which state is divided into two parts by one of the Great Lakes? By which lake is it divided? Which other lakes wash the shores of this state?
3. What other states are bordered by more than one lake? Which are the lakes?
4. Between which river systems is Devil Lake?
5. Which rises farther north, the Mississippi River or the Red River of the North?
6. How far is Lake Itasca from the northern boundary of the United States?
7. In which part of the Great Basin is Great Salt Lake? Why is the water salt?
8. In what direction does the Humboldt River flow?

Exercise

Sketch from memory a map of the Great Lakes and mark the names of the waters which connect them. Locate Duluth, Chicago, Detroit, Cleveland, and Buffalo.

CHAPTER IV

CLIMATE

The Gulf Coast of the United States is more than a thousand miles nearer the Equator and the Torrid Zone than are the Great Lakes. Consequently the Gulf coast is much the warmer. Climate varies greatly with elevation. On the slopes of high mountains in the Western States one may in a few hours climb from meadows and forests to snowy summits resembling the Polar regions. The central part of our country is more than 1,500 miles

Mount Rainier, showing meadows, forests, and fields of snow.

from either ocean. On this account the interior has less rain than the coasts.

These differences in latitude, elevation, and distance from the sea cause the chief differences in our climate.

The climate of any place is the customary state of its atmosphere. Weather is the condition of the air at any given time or for a short period of time. Weather

Skating scene on the Brandywine, Wilmington, Delaware.

changes from day to day, whereas climate is much more permanent.

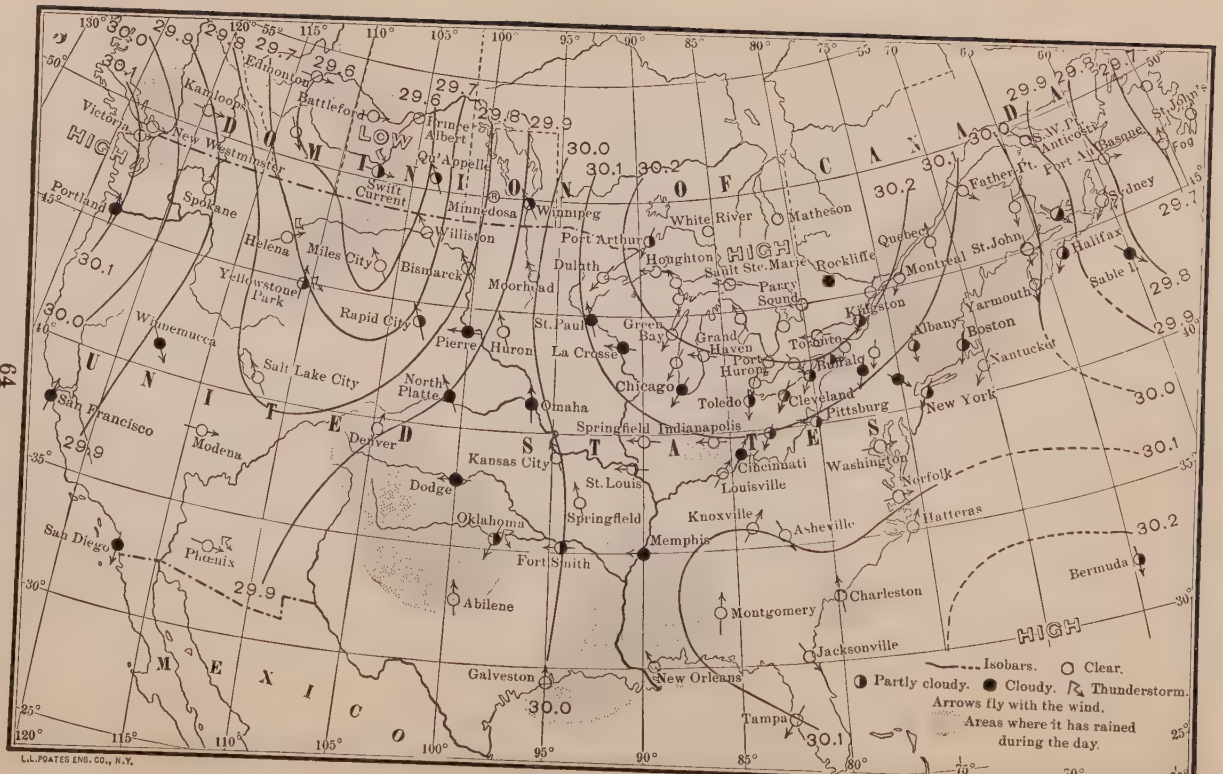
The United States enjoys a temperate climate because it is in the North Temperate Zone. The northern part is in the very middle of the North Temperate Zone, and has the cool and bracing atmosphere of that latitude. The southern part is warm. Florida and the southern edge of the Gulf Coast Plain, and the southern part of California, Arizona, and New Mexico have a climate that is subtropical or nearly tropical. Such a climate permits the growth of oranges, pineaples, sugar cane, and palms.

Seasons. As the earth revolves around the sun, on its journey from winter to summer, the Northern Hemis-

phere gradually leans more and more toward the sun, and the sun appears to mount higher and higher in the sky. The days grow longer and the nights shorter, and the weather becomes warmer with the lengthening days. Thus the change from winter to spring, and from spring to summer is accomplished. Later in the year the Northern Hemisphere leans more and more away from the sun. The days shorten and grow colder; summer passes into fall, and fall into winter. When it is winter in the North Temperate Zone it is summer in the South Temperate Zone. December, January and February are our winter months. It is then summer in the South Temperate Zone. March, April, and May are the spring months in the Northern and the fall months in the Southern Hemisphere. In June, July, and August it is summer here and winter south of the Equator. September, October, and November are the fall months in the North Temperate Zone. In the South Temperate Zone they are the spring months.

The seasons are not well marked along the Gulf of Mexico nor along the Pacific coast. Throughout these regions even the winters are warm. In most parts of the country, however, the seasons are distinct and each has its peculiar advantage and beauty. Winter has deep snows, frozen streams, coasting, sleighing, and skating, short days, and clear, starry nights. Spring brings new grass and flowers, budding trees, returning birds, and blue skies with billowy white clouds; it is the season for planting. Summer is a time of long days and outdoor life, of baseball, of thunder and lightning and rainbows. Autumn is the season of harvests and hunting, when the landscape glows with the rich colors of the frost-painted foliage.

Winds. Winds have much to do with climate. They carry warmth and moisture from one region to another.



A Weather Map, July 7, 1911

Warm air is lighter than cold air. The heavier cold air pushes the warm air out of the way, so that it rises. Wind is the horizontal movement of the air. Where the air is rising there is no wind. Absence of wind is a calm. The air above the Equator is so hot that it rises. Hence the Equator is a region of calms. Cooler air blows constantly toward the Equator from the northeast and southeast. This moving air is called the trade winds. They are the steadiest winds that blow. In the Northern Hemisphere they blow from the northeast toward the southwest and are called the northeast trades. In the Southern Hemisphere they blow from the southeast toward the northwest and are called the southeast trades. They are the winds upon which seamen chiefly relied in the days of sailing ships. The northeast trades wafted Columbus across the Atlantic Ocean.

North of the northeast trades is a belt of winds blowing from southwest to northeast. They are called the prevailing westerlies or westerlies. In the Southern Hemisphere there are similar westerlies blowing from northwest to southeast. Between the trade wind belt and the prevailing westerlies in each hemisphere is a belt of calms called the tropical calms. In these belts the air is descending. Very little rain falls in these belts of tropical calms.

The wind belts move north and south according to the season. When it is summer in the North Temperate Zone, the belts of winds and calms swing northward. On the other hand, when it is winter in the North Temperate Zone and summer in the South Temperate Zone, these belts move farther south.

Cyclones. In the westerlies, as they blow from west to east across the United States, there are great whirls of air moving toward a center of low pressure, called a *low*. At the low the air is rising, and toward this

center the winds whirl in from every direction for hundreds of miles around. Such a whirling movement of air is called a cyclone or cyclonic storm. Cyclones usually bring warm, rainy weather.

A cyclone does not stand still but moves forward in an easterly direction. A storm that appears on the Pacific coast may reach the Mississippi Valley in a day or two, and in one or two days more it may pass to the Atlantic coast.

So extensive is the territory covered by a cyclonic storm that no one can see it as a whole. People, houses, cities, forests, and mountains are in comparison no larger than the insects, grass, and stones above which circle the little whirling dust storms of the wayside. At whatever point the cyclonic storms start, or whatever irregular course they take, they usually leave the United States between Long Island and the mouth of the St. Lawrence River. They pass out over the Atlantic, and sometimes, after a week or more, reach western Europe.

A cyclone is followed by an anticyclone, which is a mass of air whirling outward from a center of high pressure, called a *high*. An anticyclone usually brings cool, clear weather. Our cold waves are very cold anticyclones.

Climate of the Pacific Coast. The Pacific coast has an oceanic climate. Oceanic climate is such a climate as is found in islands and in regions bordering the ocean where the winds blow from the sea.

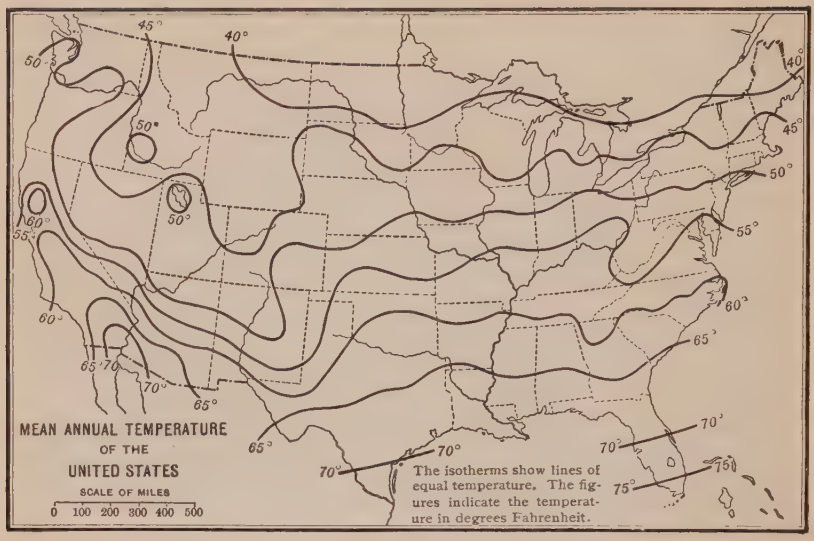
Water heats and cools more slowly than land. Therefore, in summer the sea is cooler than the land, whereas in winter the sea is warmer than the land. Water thus moderates the climate of the land near it, especially when the wind blows from the sea to the land. The westerlies blow from the Pacific Ocean toward the United States. They give the Pacific coast the most temperate

Rhododendrons, Washington.

climate in our country. Portland, Oregon, is farther north than Minneapolis on the Mississippi River in Minnesota, and much farther north than Portland, Maine; yet the latter cities have severe winters, while in Portland, Oregon, the flowers bloom the year round.

The moist westerlies blow upward over the western slopes of the Coast Ranges, and some of their vapor is condensed to rain. So plentiful is the moisture which the westerlies carry, that when they come to the still higher Cascade Mountains and Sierra Nevada, they still have plenty of moisture, which is condensed to rain or snow upon the western slopes.

There are but two seasons along the Pacific coast, the rainy season during the winter, and the dry season in summer. The coast of Washington and Oregon has the most copious rainfall in North America. It is about three times as great as the average (30 inches a year) which falls throughout the United States as a whole. In southern California the annual rainfall is low, because


MEAN ANNUAL TEMPERATURE
OF THE
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
The isotherms show lines of equal temperature. The figures indicate the temperature in degrees Fahrenheit.

tropical calms extend as far north as this region in summer.

Climate of the Interior. Far removed from the moderating influence of the oceans, the interior of the United States has very hot summers and bitter cold winters. In many parts of the Great Central Plain the winter temperature reaches 40° below zero and the summer heat rises to 90° or 100°, in the shade. North Dakota is the coldest section of the United States in winter, the temperature sometimes falling to 54° below zero; yet in summer the thermometer in North Dakota sometimes registers as high as 110°. The hottest part of the United States is in southwestern Arizona, where the temperature has risen to 119°.

Another feature of the climate of the interior of our country is the dryness of the air. Because of this low humidity, the extreme heat and cold can be borne with little discomfort. The westerlies lose most of their moisture in crossing the mountain ranges of the Cordilleran Highland. There are therefore few fogs and little dampness. The sun shines almost every day in many sections;

yet sunstrokes are less common than in a region where the humidity is greater, though the heat there is less.

A climate like that of the interior of the United States is called a continental climate. Such a climate prevails in the central portions of the continents. The great difference in temperature between summer and winter upon the Great Central Plain is due partly to the absence of mountains extending east and west. There is no obstruction in winter to the cold waves which occasionally blow far south into the Mississippi valley, causing frosts which damage the fruit crop sometimes as far as Florida.

Climate of the Atlantic Coast. The effects of the continental interior are felt even along the Atlantic coast, because the prevailing westerlies, blowing across the land, bring a continental climate to the eastern coast of the United States, and counteract, to some extent, the influence of the Atlantic Ocean.

Storms. In winter the interior of the United States is subject to severe and very cold snowstorms, called bliz-

Cutting ice on the Mississippi, Minnesota.

© R. E. Fountain

A tornado cloud.

zards. They are accompanied by high winds, and animals as well as human beings sometimes become bewildered in the driving storms, and wander about until they fall exhausted and perish in the snow.

Sometimes a small and severe storm, called a tornado, occurs in the Central Plain, especially in the states west of the Mississippi River. These storms unroof and demolish houses, barns, and other buildings, causing the loss of lives. They do great damage to crops. The people in that region build "cyclone cellars" in which they hide until the tornado has passed. Severe summer hail storms, accompanied by thunder and lightning, sometimes cause damage. The Atlantic and Gulf coasts are occasionally visited by hurricanes. These severe storms sweep northward from the West Indies, destroying property on land and causing disasters to ships at sea.

Rainfall. The eastern slopes of the Sierra Nevada and Cascade Mountains, the Great Basin, and the Columbia and Colorado plateaus, have little rain. The air has lost most of its moisture before it reaches these regions. In the Great Basin the sky is clear nearly every day in

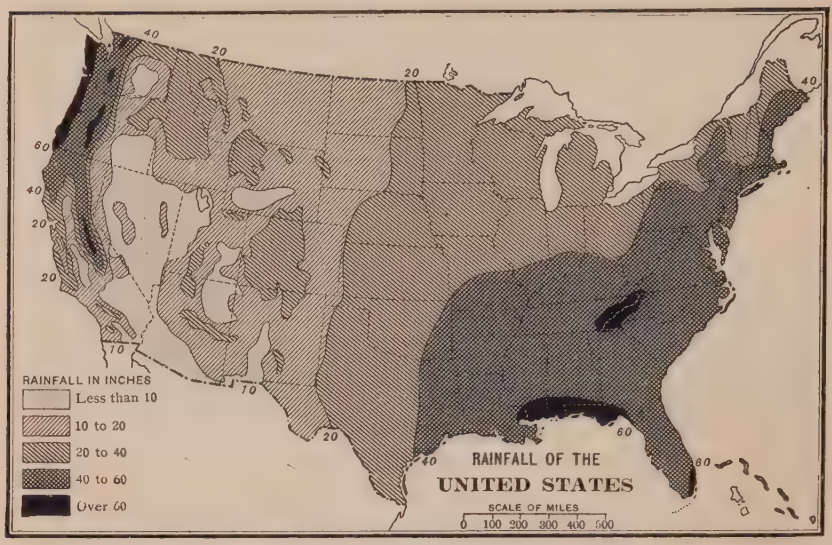
the year. Some sections, as the Mohave Desert in California and the Great American Desert, near Great Salt Lake, are true deserts. These are the driest parts of the United States. Here the sandy wastes are excessively hot during the day, but cool so rapidly after the sun sets that the nights are always cold.

The air through the Cordilleran Highland is so dry that there is little haze in the air, so that distant objects appear to be very near.

The Great Central Plain would be almost as rainless and barren as the Great Basin if it depended solely upon the moisture brought by the westerlies from the Pacific Ocean. The cyclones draw in moisture from the Gulf of Mexico and the Atlantic Ocean. The section west of the middle line of Kansas and Nebraska is farthest from these sources of rain, and is too dry for the ordinary methods of agriculture.

Due to the cyclonic winds that bring in moisture from the Atlantic and the Gulf, the eastern part of the United States is well watered.

Effects of a tornado, Louisville, Kentucky.



The Gulf coast and the Southern Appalachians have a very heavy rainfall, exceeded only by that of western Washington and Oregon.

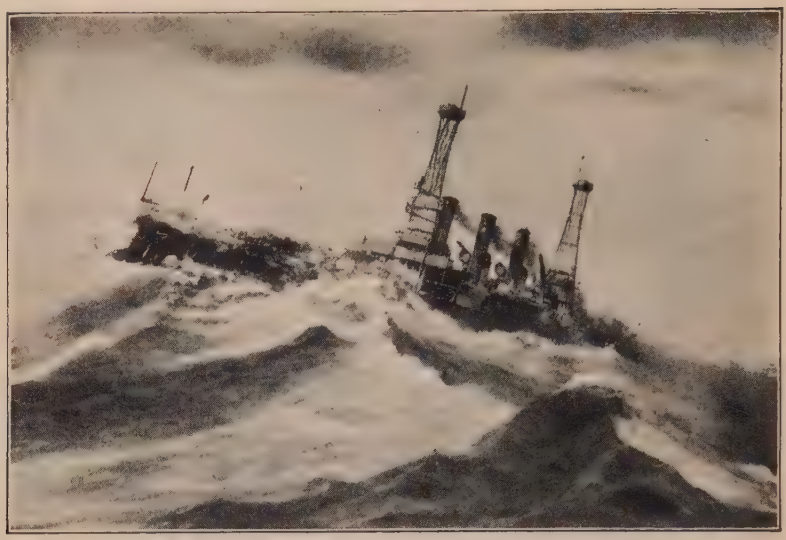
Health Resorts. Some parts of the United States have certain climatic advantages that make them sought by invalids. The pine forests of the Adirondacks, of Maine, New Jersey, and North Carolina contribute to the purity of the air. Sufferers from pulmonary diseases go to the dry air of Arizona, New Mexico, and Colorado. Many persons visit the seaside resorts for the salt air.

United States Weather Bureau. The advantages of knowing beforehand what the weather will be has led to the establishment of the United States Weather Bureau. Hundreds of observers scattered throughout the country report every day by telegraph or telephone what the weather is at their stations. They report the temperature, direction and velocity of the winds, humidity, cloudiness, number of inches of rainfall, and other facts. From these reports the officials of the Weather Bureau forecast or predict the probable weather for

every part of the country for the next day or two. Within a few hours after the reports are received, the predictions are printed, maps made and sent out. Flags and notices are put up in many cities. Along the coasts of the Great Lakes and both oceans, weather signals are displayed from steel towers erected for the purpose. The forecasts enable farmers to plan successfully their work from day to day. In fruit-growing sections, many

Desert of Utah.

orchards are equipped with heaters that can be used to warm the air near the fruit trees and thus prevent frosts from killing the blossoms. To the owners of these orchards, frost predictions of the Weather Bureau are of great value. Railroads, especially in winter, use the forecasts in determining the size of freight trains. Forecasts also tell of storms and floods which might damage property, and seamen are often saved from shipwreck by remaining in port and avoiding disastrous



Battleship Vermont in a heavy sea.

storms. By means of wireless messages, reports of the weather at sea are sent from vessel to vessel.

Questions

1. How does latitude affect climate? How does elevation affect it? Distance from the sea?
2. How does climate differ from weather?
3. What is the direction of the prevailing wind in your locality?
4. Which parts of the United States have a subtropical climate?
5. Where is the hottest part of the United States? Which section has the heaviest rainfall?
6. What is a low? A high? A tornado? A cyclone?

Exercise

Name the three types of climate. Describe each. Tell where each prevails in the United States.

CHAPTER V

PEOPLE

Population. About a hundred million people live under the Stars and Stripes. Most of them belong to the Caucasian or white race; most of them were born in the United States; and nearly all of them speak English. The inhabitants of our country are counted every ten years. This count is called a census.

Immigration. The ancestors of the white people in the United States came from Europe. For more than three hundred years strong and ambitious Europeans have been coming to our country, seeking freedom and fortune in the New World. They are called immigrants. Until recently most of them came from England, Ireland, Scotland, Germany, Sweden, and Norway. They have

Immigrants at Ellis Island, New York.

all helped to make our country great. Most of our immigrants now come from Italy, Austria-Hungary, and other countries of southern and eastern Europe. Many Jews come from Russia to escape persecution.

Most immigrants land at New York. From there some go to many parts of our country, furnishing workmen for our farms, forests, factories, and mines. Others remain in the cities along the Atlantic coast. Although speaking different languages at home the immigrants soon learn English and become patriotic Americans.

The South and some of the western states have few immigrants, but in other sections they are numerous. The English, Scotch, Germans, Swedes, and Norwegians generally settle in farming districts. Most of the people from southern Europe settle in towns and cities, working in mines and factories. In the southwest, along the Mexican border, are Mexicans who speak Spanish, and in the northeast, near the St. Lawrence River, as well as in the cotton, woolen, shoe, and rubber mills of New England, are French Canadians who have immigrated from Canada.

There are about 125,000 Mongolians or people of the yellow race in the United States, chiefly Chinese and Japanese. They enter our Pacific ports, and most of them stay in California and other western states, where they are employed in farming, domestic service, or at common labor. Chinese laundrymen are found in many cities. The United States has forbidden the immigration of any more Chinese. In San Francisco and New York the part of the city where the Chinese live is called "Chinatown." Most of the Japanese in the United States are engaged in trade. In the northwest there are a few Hindus from Asia. No paupers, anarchists, criminals, or persons suffering from contagious disease are admitted as immigrants to our shores.

Negroes. There are about ten million negroes in the United States. Most of them are descended from slaves brought from Africa to the plantations of the South. After the Civil War all slaves were set free. Most of the negroes still live in the Southern states. At Hampton in Virginia, Tuskegee in Alabama, and elsewhere, there are schools where trades and farming are taught. Many are educated, and our negro population includes prosperous farmers, mechanics, physicians, lawyers, teachers, and merchants.

Indians. The Indians were the original inhabitants of the United States. When the white men came the Indians were driven ever farther west, often fighting fiercely to protect their hunting grounds from the pioneers who wanted them for farms. They left behind

Zuni Pueblo, New Mexico.

only their names, which have been applied to many states, cities, rivers, and other features in the United States.

There are about a quarter million Indians in the United States. Iroquois Indians live at Niagara Falls and elsewhere in New York state, and in Maine; Chippewas near Lake Superior; Cherokees in North Carolina; and Seminoles in Florida. Most of the Indians, however, are west of the Mississippi River. In the southwestern United States the Zuni and Moki Indians live in great tenement houses, or pueblos, of adobe or sun-dried clay. In the walls of canyons which lead into the canyon of the Colorado River are the caves and huts of the cliff dwellers. All have been abandoned.

The older Indians are but partly civilized. They depend partly upon the United States to give them food and clothing. Among the Navajos, who have large flocks of sheep, the women weave handsome rugs and

Cliff dwellings, Colorado.

blankets. The young men and women among the Indians have often been educated at such schools as Hampton, Virginia, or Carlisle, Pennsylvania. The young men are often fine athletes. When they return to their homes they become thrifty farmers and mechanics, and a few of them become wealthy. In Oklahoma especially, there are large farms with fine houses and large barns owned by such Indians.

Wealth. The United States is the richest country in the world. Our people have better homes and more luxuries than people in similar stations in most of the other countries. The wages here are higher than in Europe, and that attracts many laborers and artisans. The cost of living is higher, partly because Americans live better. Rent, food, clothing are more expensive; and merchants, farmers, and manufacturers receive more for their wares and products than in foreign countries.

Houses. The houses differ according to locality as well as taste and wealth. Many persons own their homes; others rent them. The latter are called tenants. Houses are chiefly built of wood and are called frame houses. Many houses are built of brick or stone. In the Southwest some houses are built of adobe or sun-dried brick. Some are small and humble, containing but a few rooms, others are great mansions, resembling the palaces of the Old World in cost, size, and beauty. Out in the country houses are far apart, and in the far West, on the great cattle farms, called ranches, neighbors often live many miles apart. In some of the northern states the house, sheds, and barns are sometimes joined in one long line of buildings so that the farmer can easily attend to the horses and cattle when the snows of winter drift high. In all parts of the country the barns where cattle are sheltered and harvests stored are huge buildings, much larger than the house of the farmer.

In cities, houses are sometimes built in long rows, side by side, to save land, which is very valuable. In other cities, where land is still more expensive, tall buildings called apartment houses are built from five to twenty stories high. Here several families often live on each floor, the rooms where a family lives being called a flat

Fifth Avenue and St. Patrick's Cathedral, New York.

or apartment. The highest buildings have elevators. Besides the residence where they spend most of the year, many persons have summer cottages, bungalows, or camps located in the mountains or by the sea, where they spend the warm summer months. There are also fine estates of great size, and wealthy families may have winter homes in Florida or southern California.

Religion. Christianity is the prevailing religion in the United States. Christians believe in both the Old and New Testaments and most of them observe Sunday as a

day for rest and worship. In addition to the Roman Catholics there are many Protestant denominations, such as the Methodist Episcopal, Baptist, Presbyterian, Congregational, Lutheran, Episcopal, and others. Churches are among the finest buildings in our country. The missions of California are among our oldest structures. St. Patrick's Cathedral and the Cathedral of St. John the Divine, both in New York, and Trinity Church, Boston, are among the finest of our modern buildings. Our country enjoys religious freedom, and people of every faith may worship according to their own religion.

Jews or Hebrews are numerous in the United States. Their Bible contains only the Old Testament and their places of worship are called synagogues.

Schools. No country gives greater attention to education than the United States. Every state has free schools for its children. In some places schoolbooks and stationery are free.

There are many colleges and universities in the United States. Some of the leading institutions are Harvard, at Cambridge, Massachusetts; Yale, at New Haven, Connecticut; Columbia, in the city of New York; Princeton, at Princeton, New Jersey; University of Pennsylvania, at Philadelphia; University of Chicago, at Chicago; Catholic University of America, at Washington, D. C.; Johns Hopkins, at Baltimore; Cornell, at Ithaca, New York; University of California, at Berkeley; Leland Stanford, at Stanford, California; and Vanderbilt University, at Chattanooga, Tennessee. Most of these colleges admit women as students. The United States has two great government colleges,—the Military Academy, at West Point, New York, where young men are trained as officers for the Army; and the Naval Academy, at Annapolis, Maryland, where the officers who command the ships of our Navy are educated. Many states have agricultural

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Barnard College, Columbia University, New York.

colleges, where farming is taught, and normal schools, where teachers are trained. Among the leading women's colleges are Vassar, at Poughkeepsie, New York; Smith College, at Northampton, Massachusetts; Barnard, at New York; Bryn Mawr, at Bryn Mawr, Pennsylvania; and Wellesley, at Wellesley, Massachusetts.

National Defense. Our country has a navy of battleships to protect our coasts in case of war, but it is not as powerful as the navy of England or that of Germany. Our army is much smaller than that of any other important country. The United States is a peaceful nation and depends for protection upon its just treatment of other countries and upon its secure position in the heart of North America, separated from the great nations of Europe and Asia by the oceans which guard our coasts both east and west. Our American neighbors are Mexico and Canada. The latter is a peaceful nation like our own. Mexico, though warlike, is much smaller. Many young men are members of the militia or National Guard which trains them to be soldiers. They meet and

drill in buildings called armories, where their guns and other weapons are stored.

Newspapers and Books. About one-half the newspapers in the world are printed in the United States. The number of papers printed in the United States is about 16,000. They include daily papers as well as weekly papers. In the very large cities an edition giving the very latest news is printed every hour, or even oftener. The great papers furnish news to the towns, villages, and farms near the large cities where they are published. Some papers are printed in foreign languages, but most are in English, because our foreign-born citizens are able to read English, even though they may not have learned our language until after they came to this country. Many magazines are issued; and thousands of new books are published every year. The United States has many great libraries. The largest is the Library of Congress at Washington, D. C., with almost 2,000,000 volumes.

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Battleship New Hampshire firing a broadside.

The great colleges and universities have large libraries. Every city of importance, and many small villages, have public libraries. Andrew Carnegie has helped found many libraries. Some of the large cities support museums and art galleries. The former contain collections of historic or scientific material; the latter, paintings and sculptures.

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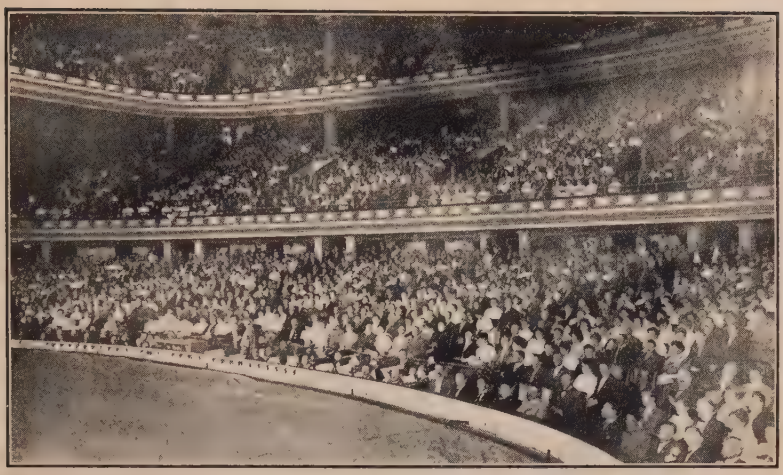
A baseball game.

Recreations. Our people take time for wholesome amusements. Baseball is our national game. Much attention is given to athletics. Relay races and long distance races, such as the marathon, are popular. So is football in the fall; and skating, sleighing, and tobogganing in winter. In summer bathing is enjoyed in all sections of the country. Golf, tennis, polo, hockey, and basket ball are sports in which many engage. Theatres are found in the larger towns and cities; and motion pictures are exhibited throughout the country. Thou-



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Spectators at the Hippodrome, New York.

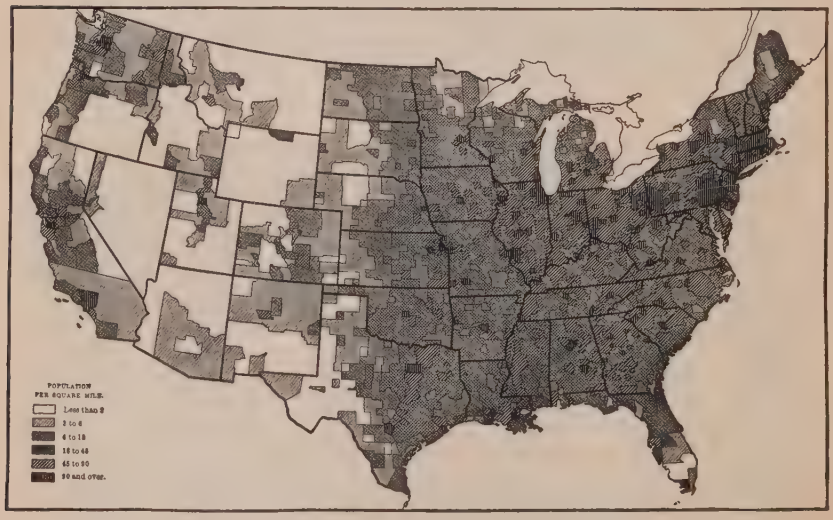
sands of boys belong to the Boy Scouts of America. The training they receive is enjoyable and wholesome. The Camp Fire Girls is a similar organization of girls.

The American People. No other country in North or South America has so many people or is as important as ours. For this reason we are called Americans. Americans are great travelers and may be found in every part of the globe. American tourists go through

Boy Scouts in camp.

Europe every summer and are welcomed by hotels and merchants for their liberality. Americans are energetic and self-reliant. They are skillful workmen, many are inventors and many others are great leaders in manufacturing and commerce. Our history is a record, in the main, of a successful struggle to organize a form of government that gives freedom and justice to all its citizens. The greatest names in American history are George Washington and Abraham Lincoln.

Distribution of Population. The northeastern part of the United States is the most densely settled quarter of our country. In this section are the great manufacturing and commercial centers. The western half of the United States, except the belt along the Pacific, is sparsely settled. The six states having the greatest density of population are Rhode Island, Massachusetts, Connecticut, New Jersey, New York, and Pennsylvania. The six states lowest in density of population are Nevada, Wyoming, Arizona, Montana, New Mexico, and Idaho.



Distribution of population in the United States.

Questions

(Turn to the Tables, pages 212, 214.)

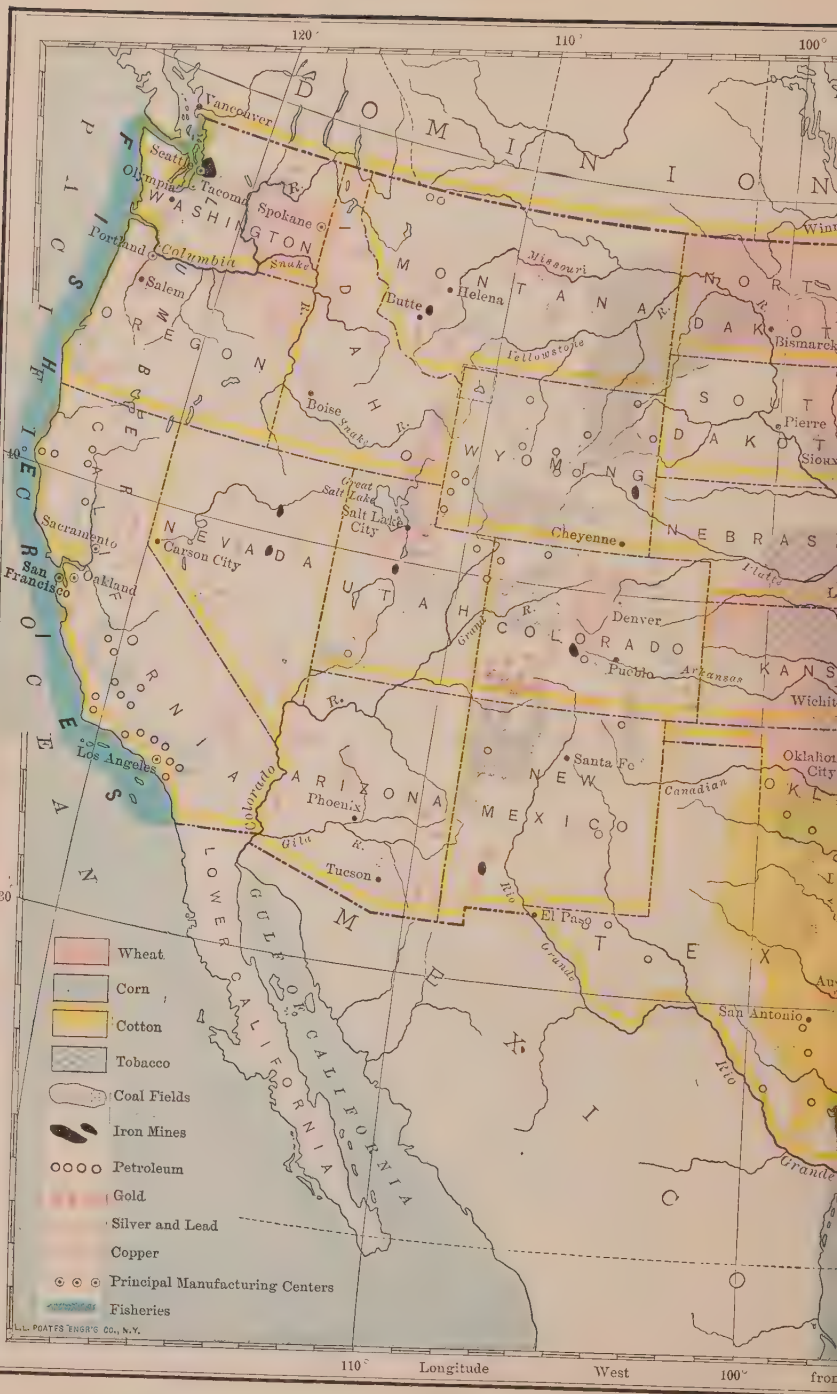
1. What is the population of the main body of the United States? Of the outlying possessions? What is the total population?
2. What part of the people in the Western Hemisphere live in the United States?
3. To which race do the white people belong?
4. How does the number of negroes compare with the population of our three largest cities? With our most populous state?
5. Does living in a foreign quarter help or hinder an immigrant in becoming an American? Why?

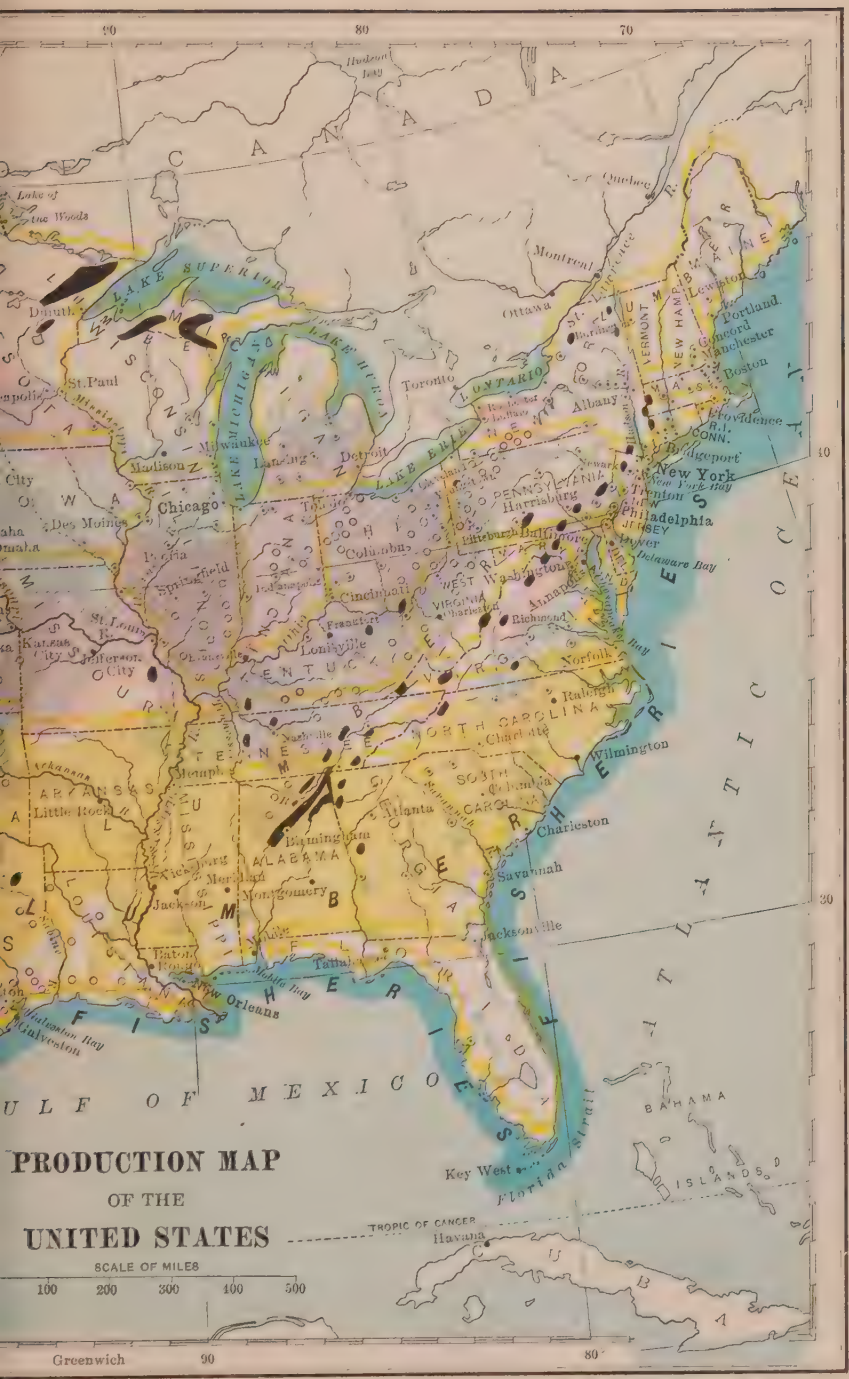
Exercises

Compare the area and population of the United States with the area and population of Europe; of Canada.

Name all the Indian tribes you can. Name five large cities that bear Indian names.

Make a list of states that have Indian names. Make similar lists of rivers, lakes, and mountains.


120°
110°
100°
DOMINION
Vancouver
Seattle
Olympia
Tacoma
WASHINGTON
Spokane
Portland
Columbia
Snake
Salem
OREGON
Butte
Helena
MONTANA
Missouri
Yellowstone
Bismarck
Pierre
Sioux
Boise
Snake R.
WYOMING
Great Salt Lake
Salt Lake City
Cheyenne
Sacramento
Carson City
NEVADA
UTAH
Denver
COLORADO
Pueblo
Arkansas
Wichita
San Francisco
Oakland
Los Angeles
Colorado
ARIZONA
Phoenix
Santa Fe
NEW MEXICO
Canadian
Oklahoma City
Gila R.
Tucson
El Paso
Rio Grande
TEXAS
San Antonio
Rio Grande
PACIFIC OCEAN
GULF OF CALIFORNIA
LOWER CALIFORNIA
MEXICO
40°
30°
Wheat
Corn
Cotton
Tobacco
Coal Fields
Iron Mines
Petroleum
Gold
Silver and Lead
Copper
Principal Manufacturing Centers
Fisheries
J.L. PEATTIE ENGR'G CO., N.Y.
110° Longitude West 100°


PRODUCTION MAP
OF THE
UNITED STATES
SCALE OF MILES
100 200 300 400 500
TROPIC OF CANCER
Greenwich
90
80
70
CANADA
Montreal
Ottawa
Toronto
Quebec
Portland
Boston
Providence
New York
Philadelphia
Chicago
Detroit
Cleveland
Cincinnati
Pittsburgh
Baltimore
Washington
Richmond
Norfolk
Raleigh
Wilmington
Charleston
Savannah
Jacksonville
Atlanta
Birmingham
Memphis
Louisville
St. Louis
Kansas City
Omaha
Minneapolis
St. Paul
Milwaukee
Madison
Des Moines
Indianapolis
Columbus
Albany
Buffalo
Hartford
Trenton
Newark
Harrisburg
Lansing
Nashville
Little Rock
Jackson
Vicksburg
Montgomery
Mobile
New Orleans
Galveston
Houston
Key West
Havana
BAHAMA ISLANDS
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
ATLANTIC OCEAN
GULF OF MEXICO
Florida
Delaware Bay
Chesapeake Bay
Mississippi
Ohio
Missouri
Tennessee
Arkansas
Red
Rio Grande

CHAPTER VI

MINERALS

Coal, iron, and limestone have helped to make the United States the chief manufacturing country in the world. These three minerals are found mostly in the eastern half of our country. The Cordilleran Highland has extensive deposits of gold, silver, copper, and other metals. Building stone, petroleum, natural gas, clay, sand, salt, and other minerals are widely distributed.

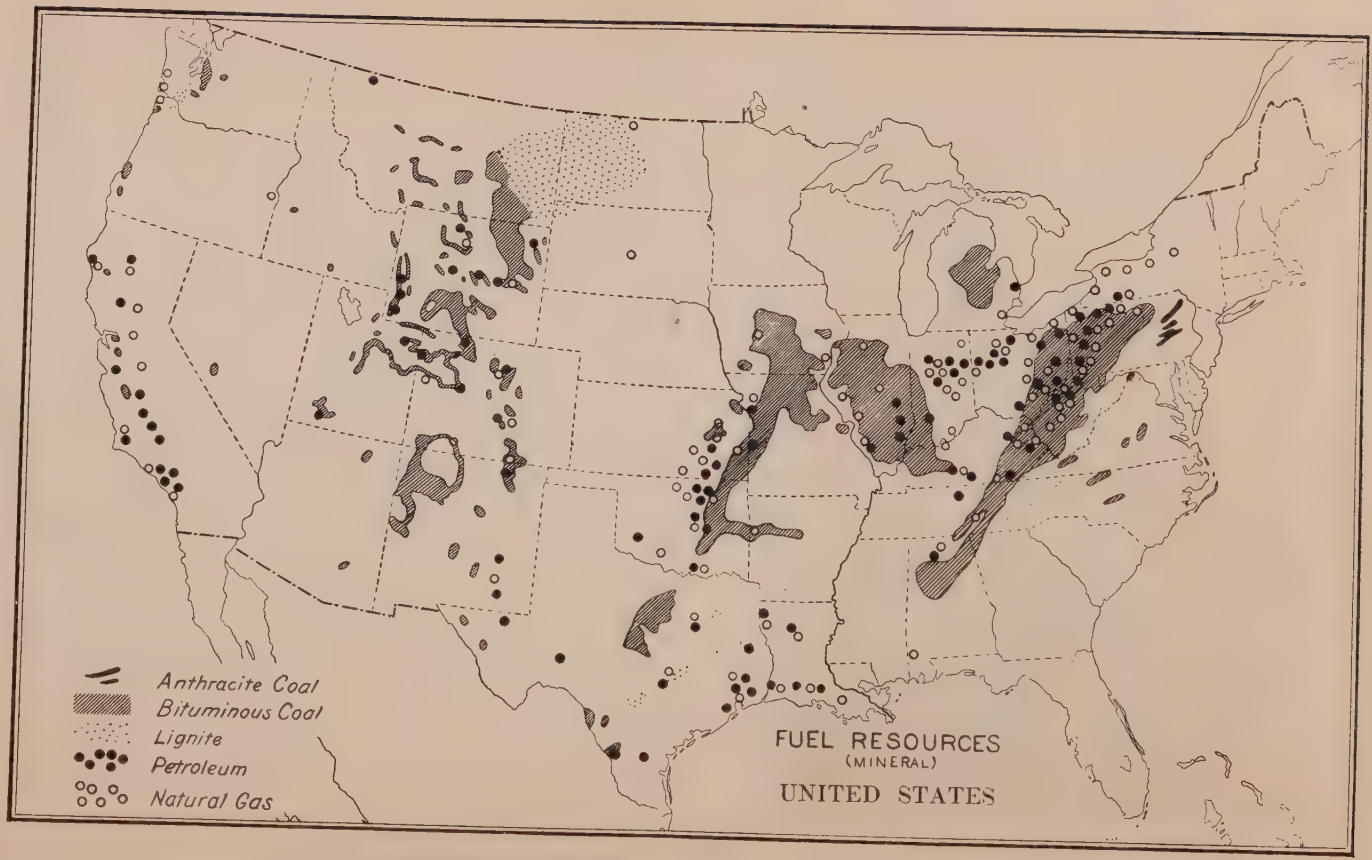
Coal. Most of our coal is mined in Pennsylvania, West Virginia, Illinois, Ohio, Indiana, and Alabama. Some coal is found in more than half of the states.

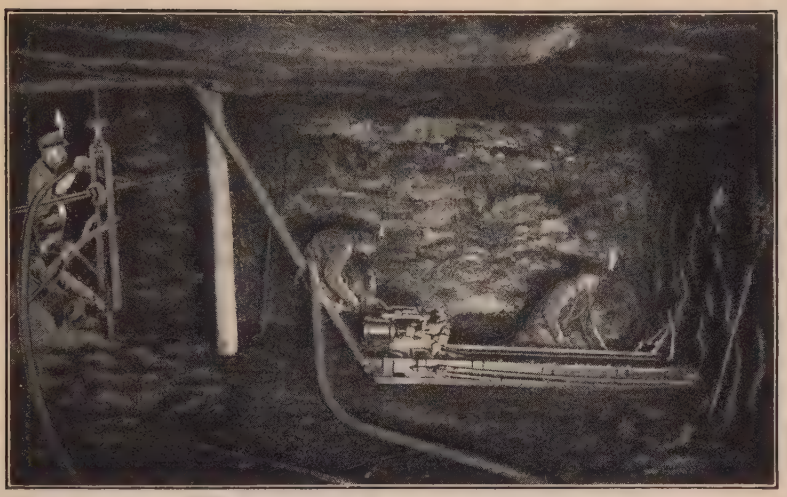
Beneath the surface of many bogs and marshes is found a layer of black vegetable matter, called peat. As the plants that grow in these places die and fall beneath the water, they do not decay, but slowly change to peat. In Ireland and in several other countries peat is dug up and used for fuel. Long before the Ice Age, in what are now the coal regions, there were extensive swamps and bogs. The climate was hot and moist, and the vegetation was rank and rapid in growth. Ferns as large as trees grew in these low lands. As the plants died they settled beneath the water and slowly changed into peat. These swampy conditions existed for thousands of years, and the layer of peat grew to great thickness. Then came a sinking of the land and these swamps became the floors of shallow seas. Rivers from neighboring lands brought in mud and sand which covered the peat. Later, these regions were raised above sea level,

A coal mine.

and again plants grew, died, and changed into peat. Thus by the alternate sinking and rising of the land, which occurred many times, alternate beds of peat and rocky sediment were formed. In the course of untold centuries, the sand, mud, and peat were hardened under pressure into layers of rock and seams of coal. Fossils of plants and animals are found in the coal and in the slate and sandstone between the layers of coal.

Coal is usually so far underground that a shaft, often more than a thousand feet deep, is dug before the layers or seams of coal are reached. A place where coal or other minerals are taken from the interior of the earth is called a mine, and the workmen are called miners. Elevators lower the miners down the shaft, or pit, and lift them and the coal to the surface. In some mines ladders are used. Where the shaft pierces a seam of coal small passages, called tunnels, branch off and cross one another like the halls or corridors of a tall building. Seams of coal are usually from three to ten feet thick.


Anthracite Coal
Bituminous Coal
Lignite
Petroleum
Natural Gas
FUEL RESOURCES
(MINERAL)
UNITED STATES



In a coal mine. The drill is worked by compressed air.

The miners often crouch upon the floor of the tunnel working with drill or pick to loosen the coal.

Props of timber or pillars of coal are left to hold up the roof of the tunnel. At the surface the large lumps are crushed in a huge machine called a breaker, where boys pick the pieces of slate, stones and other impurities from the coal as it slides down the breaker.

The miner's life is in constant danger from falling roofs and walls and from the powder and dynamite used in blasting. Every year thousands are injured and hundreds are killed in the mines. From the layers of rock water flows into the mine. This water is pumped out, but sometimes an underground stream floods the mine and drowns the miners. There are also dangerous gases, called damps, which occasionally cause explosions that kill many of the miners. To avoid this, the mines are ventilated, and the miners use safety lamps. Some mines are lighted by electricity; in others oil lamps or candles furnish the only light.

Coal has largely taken the place of wood as a fuel and

of water power in manufacturing. Most of our machinery could not be made or used without coal. Coal warms our buildings, cooks our food, provides power for the trains and steamboats on which we travel, and indirectly makes it possible for millions of people to make a living. Electricity is taking the place of coal for some purposes, but coal is still needed to generate electricity, except where there is much water power.

There are two kinds of coal,—hard or anthracite coal and soft or bituminous coal. Almost all the anthracite coal is mined in Pennsylvania. It gives but little smoke or soot when burned, and is preferred for residences. The principal anthracite mines are in eastern Pennsylvania, near Wilkes-Barre, Scranton, and Pottsville. Soft coal is more plentiful than hard coal. The bituminous mines of Pennsylvania are near Pittsburgh, Johnstown, and Connellsville.

In the West the chief coal mines are in Colorado, Washington, and Wyoming.

Graphite. Coal is well called "black diamond," not only because of its importance, but because it is mainly carbon. Diamonds are pure carbon. Another form of pure carbon is called graphite. It is black, shiny, and very soft; and is used for lead pencils, lubricants, and crucibles.

Petroleum. Near the coal fields of western Pennsylvania, Oklahoma, West Virginia, Ohio, and Indiana, as well as in Texas, California, Kansas, and other states, are strata of porous rock containing a mineral oil, called petroleum (*petra* means rock; *oleum* means oil). Oil wells are bored or drilled like artesian wells, and vary in depth from 300 to more than 3,500 feet. The oil spouts out of some wells; from others it is pumped up. It is stored in large tanks.

Crude oil is yellow or dark brown, and has an offensive

odor when it comes from the ground. Many products are made by refining or purifying it. The commonest is kerosene oil, widely used for light and fuel. Other products are gasoline, used for engines; benzine, used by painters; vaseline, a salve; paraffin, a white wax; and

A spouting oil well.

lubricating oils. Illuminating gas is sometimes made from petroleum. Many marine locomotives and engines burn crude oil. Crude oil and petroleum asphalts are used for roads and roofs.

California, Oklahoma, and Illinois are the leading petroleum states, and produce about three fourths of the entire yield of the United States.

Crude oil is pumped for thousands of miles through pipe lines which extend from the oil fields of eastern Kansas to Chicago, Illinois, and from there through the oil regions of Ohio, Indiana, West Virginia, and Pennsylvania to the huge oil refineries at Bayonne, New Jersey,

and other places along the Atlantic coast. The pipes are mostly underground, but in some places they lie uncovered along the surface. The oil is forced through the pipes from one pumping station to another. There are important refineries at Kansas City, Chicago, San Francisco, Los Angeles, Cleveland, Buffalo, Parkersburg, and other cities near the oil fields. Other refineries are near New York, Philadelphia, and Baltimore, ports from which the petroleum is readily shipped, as refined oil, in tank cars on the railroads, in tank wagons along the streets and roads, and in tank steamers across the Atlantic and Pacific oceans to every part of the world.

The United States produces more petroleum than any other country in the world.

Natural Gas. In the coal and oil regions of Pennsylvania, Ohio, Indiana, and other states there are wells of natural gas. Pipes are laid from the wells, as from a gas works, to houses and factories. Pittsburgh, Buffalo, and other cities are thus supplied. The gas is used for lighting, for heating, and for manufacturing.

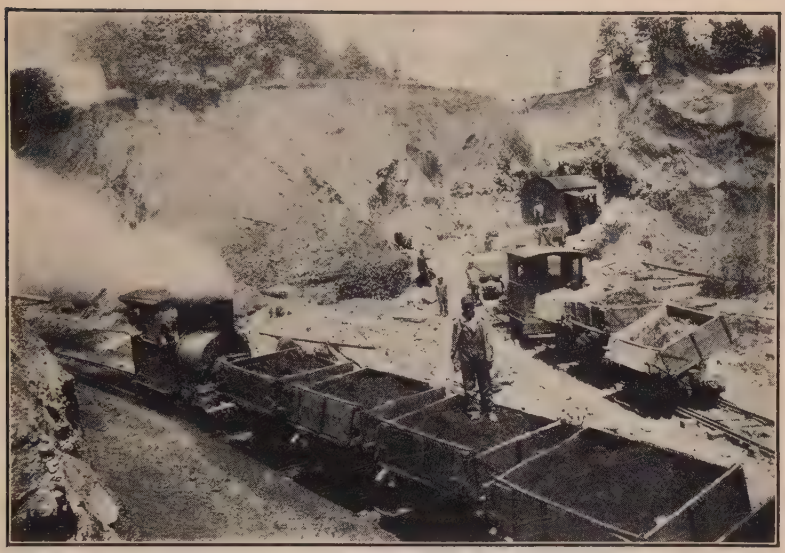
Questions

1. Which are the chief coal states east of the Mississippi? West of the Mississippi?
2. Which coal states are south of the Ohio?
3. What is the difference between peat and coal? Between bituminous coal and anthracite?
4. Where are the chief mines of anthracite coal?
5. Which states have great oil fields? Great gas fields? What are the chief methods of transporting oil?
6. What are the chief uses of petroleum? Of natural gas?

Exercises

Sketch a map of the United States, and shade the principal coal regions dark and the oil regions light.

Make a list of all materials that are used for fuel.

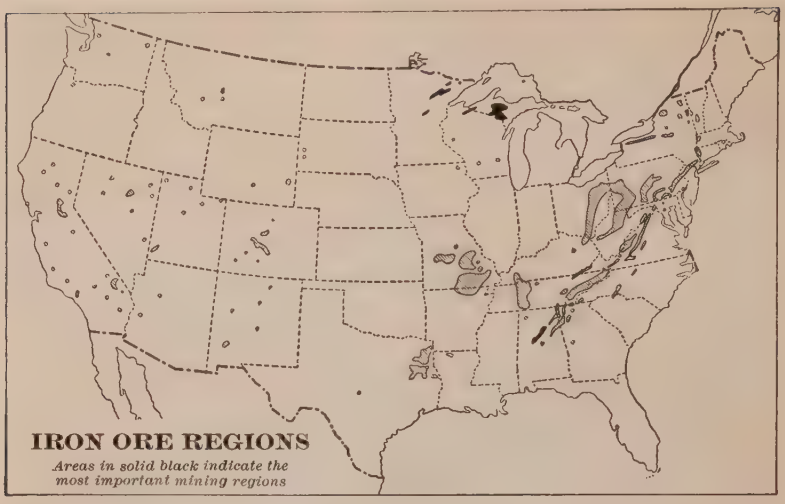


An iron mine. The ore is so near the surface that it is dug out with steam shovels.

Metals. The United States has abundant deposits of metals. Gold and silver are the two precious metals. The United States ranks second in the world in the production of each. In the production of iron, copper, lead, and aluminum the United States leads the world.

Iron and Steel. Iron is the commonest, strongest, and most useful of all metals. It is usually found mixed with clay, quartz, or other minerals. The combined minerals are called iron ore. There is some iron ore almost everywhere, coloring the earth yellowish, brownish, or reddish, like rusty iron. It is not profitable to mine iron ore, unless one quarter of it is iron.

There are more than 500 iron mines in the United States, the most important being near Lake Superior, in Minnesota, Michigan, and Wisconsin. The ore in this section is easy to mine, is very rich, and can be shipped cheaply by way of the Great Lakes. It is loaded at Duluth, Superior, and other ports and sent east in summer



before the lakes freeze and traffic is interrupted. There are deposits of iron in Pennsylvania, West Virginia, Virginia, Alabama, New York, New Jersey, Washington, and several other states.

The principal iron and steel-making district in the United States is in and near Pittsburgh. The best coking coal comes from Connellsville, near Pittsburgh. On this account nearly all of the iron ore is shipped almost 1,000 miles from the Lake Superior mines. Coke is made by baking coal in ovens to drive off the gases. The coke which remains is a very pure form of carbon, and is the part of coal that gives intense heat.

It is used to heat the blast furnaces in which iron is separated from the other minerals in the ore. Lumps of iron ore, limestone, and coke are dumped together into the furnace. Great heat is secured by fanning or blowing a strong draft or blast of hot air into the bottom of the furnace, and the minerals in the furnace are melted. The molten iron collects at the bottom of the furnace because it is heavier, and upon it floats the molten slag, which is composed of the limestone and the impurities

Charging a furnace.

in the iron ore. The two are separated by drawing off first one and then the other through openings at different levels. The slag is thrown away, and the iron is cast into bars called "pigs."

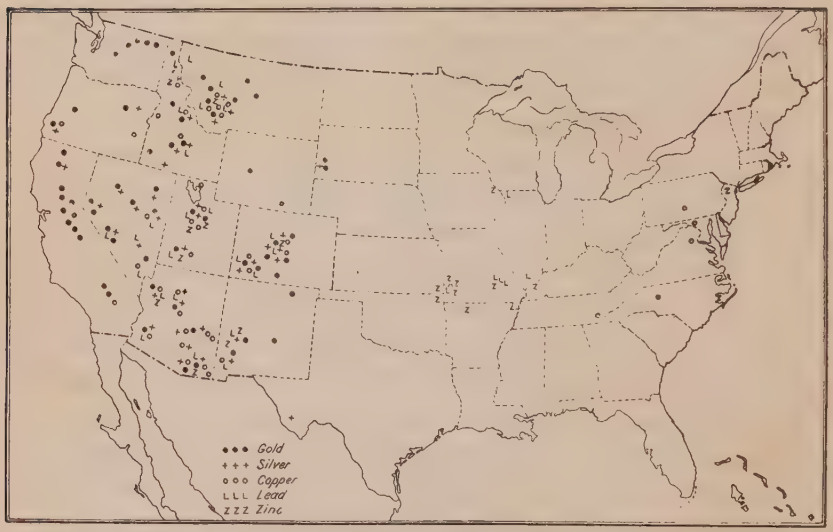
From the pig iron are made innumerable articles of iron or steel. Steel is an almost pure form of iron. Steel is used for edge tools, drills, armor plate for battleships, and other purposes. Steel is also used in the construction of our great bridges and tall buildings.

Railroads are dependent upon steel. The rails, locomotives, and cars are either entirely or chiefly made of it. Almost every workman uses steel tools. The tailor's needle and scissors, the laborer's spade and crowbar, the farmer's plow and reaper, the machinist's lathe and other machinery are of steel. The remarkable advance of electricity could not have been made without iron because the magnets, which are a very important part of electrical apparatus, are made of it.

But little less important than the Pittsburgh district are the iron-making districts along the Great Lakes. The iron ore is brought from the Lake Superior mines and the coal for coke is brought mainly from the mines of Pennsylvania and West Virginia. Chattanooga, Tennessee, and Birmingham, Alabama, manufacture iron, using southern ore and coal. A considerable amount of iron and steel goods is manufactured in the cities of the Atlantic seaboard.

Lead. The state of Missouri leads in the production of lead in the United States, and Idaho ranks second. Utah and Colorado rank next.

Lead is separated from the ore in smelters, the principal centers of the industry being Joplin, Missouri; Denver, Pueblo, and Leadville, Colorado; Helena and Great Falls, Montana; and Salt Lake City, Utah.



Mining centers, gold, silver, copper, lead, zinc.

Lead is a very soft metal, easily melted, and is much used by plumbers, whose trade is named from the Latin

word *plumbum,* which means lead. It is used for lining sinks and tanks that are to contain acids. Shot and bullets are made from it. A mixture of metals is called an alloy. Type metal, from which printing type is made, is an alloy of lead. Solder, used for fastening pieces of

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Copper on cars, Arizona.

metal together, is an alloy of lead and tin. A preparation of lead called white lead is used for making paint. People who are employed where lead is used often contract a disease called lead-poisoning.

Copper. The chief copper mines of the United States are in Arizona, Montana, Michigan, Utah, and Nevada. In Michigan some copper is found in its native state. Even before the discovery of America the Indians mined copper in this region and made rude copper implements.

Copper is so much used for electric wires and cables that it ranks next to iron as a useful metal. It is also used for roofing, for sheathing the hulls of ships, for

cooking utensils, and for coins. Preparations of copper are used in making blue and green paints and dyes. On account of its color it is used to alloy gold, making it reddish. Alloyed with other metals it forms brass, bronze, gunmetal, and German silver.

Aluminum. Aluminum, although less important than many other metals, is useful because it is very light, yet strong and rigid. The mineral from which aluminum is chiefly obtained is bauxite. The principal deposits are found in Arkansas, Alabama, Georgia, and Tennessee. Aluminum is used for making the frames of aeroplanes, automobile bodies, parts of boats, cooking utensils, and surgical instruments. It is manufactured on a large scale in great establishments at Niagara Falls and elsewhere.

Mercury. Mercury or quicksilver is a liquid metal found in an ore called cinnabar. Nearly all the mercury mined in the United States comes from California, Nevada, and Texas.

Since mercury will not freeze in the lowest temperatures usually reached in the temperate zone, it is used in thermometers. It is also used in barometers, instruments that measure the pressure of the air, and in steam gauges, vacuum pumps, electric switches, in dentistry, for silvering mirrors, and for making calomel and other medicines. The beautiful color called vermilion is made from mercury. Cinnabar is used in making red or brown paint.

Zinc. The United States ranks as one of the three chief countries in the production of zinc. This metal is found in the Ozarks of Missouri, and in Colorado, Montana, New Jersey, and Kansas. It is chiefly used to coat iron, to protect it from rusting. Iron so coated is called galvanized iron. Zinc is also used in electric batteries.

Gold. Gold is one of the precious metals. It is the general standard of value, and all our most valuable

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United States Mint.

coins are made from it. More than three fourths of the gold in the world is used as money. Gold is found in many of the great mountains of the world. Sometimes it is found mixed with sand and gravel in alluvial deposits carried down from the mountains. The gold itself may be in tiny grains or in lumps like pebbles. The latter are called nuggets. The gold now mined in the United States is mostly obtained from ore. The mines of California and Colorado produce about half of the gold produced each year in the United States. The rest comes from Nevada, South Dakota, Utah, and other states. Much gold is also found in Alaska.

On account of its great value and beauty, gold is made into costly jewelry and ornaments. It is very soft and tenacious, and can easily be worked into delicate and beautiful designs. It can be beaten into sheets thinner than paper. This is called gold leaf, and is used in gilding letters and signs, picture frames, furniture, and pottery. By means of electricity other metals can be plated with gold. Gold is hardened by mixing it with copper or

silver. The amount of gold in the alloy is measured by karats. Pure gold is 24 karats fine. 18-karat gold has 18 parts gold and six parts of silver or copper.

Silver. Silver is another precious metal. It is found combined with gold, copper, lead, and other minerals. Mexico is the only country that produces more silver than the United States, and these two countries furnish more than half of the silver in the world.

In the United States, Nevada, Montana, Utah, Idaho, and Colorado are the leading silver states. Nevada has some of the richest gold and silver mines in the world. Silver is used for coins, table ware, and for plating other metals. It is made into jewelry to be plated with gold.

The purity or fineness of silver is measured in thousandths. Sterling silver is an alloy containing 925 parts of silver and 75 parts of copper or other metal.

Other Metals. Tungsten and vanadium are rare metals mined in the western part of the United States. They are used in making alloy steel for tools, engine parts, and other articles requiring steel of great strength or hardness. Tungsten is also used in making the filaments of the tungsten incandescent lamps. Radium is a mysterious metal so valuable that a small fraction of an ounce is worth thousands of dollars. It is used in surgery and for experimental purposes in laboratories. There are large deposits of radium-bearing minerals in Colorado.

Nonmetals. The United States has much mineral wealth besides its metals. Coal is the principal non-metallic mineral. Limestone is almost indispensable to the manufacture of iron and steel. Granite, marble, slate, and sandstone are used for buildings. Sand is used for buildings and is made into glass.

Clay. Clay is a rock that has not been completely hardened. Most clays were deposited in still water. The

A kaolin mine.

waters have dried up, leaving beds of clay, usually covered by other earth. The clay is dug from pits with spades or by large steam shovels. There are different grades of clay. China clay is white, and is used for making pottery. It is so called because such ware was first brought from China. The finest white clay is called kaolin. It is found in Pennsylvania, North Carolina, and several other states. Another kind of clay which resists heat is used to line stoves and furnaces. It is called fire clay. Common clay is used to make bricks, terra cotta, sewer pipe, drain tile, and hollow building blocks. Bricks are usually made by machine. The clay is ground, mixed, and pressed into bricks. After they are dry they are placed into a sort of furnace called a kiln, where they are baked or fired. The reddish color of bricks is due to the iron in the clay. Brick clay is found in many sections, especially near Haverstraw and other places along the Hudson River, near Philadelphia, and Perth Amboy, New Jersey. Ohio, Pennsylvania, and New Jersey are the three leading states in the production of clay products.

Building Stone. Stone, such as limestone and granite, is blasted from great pits called quarries. Marble is one of the most valuable building stones. It is often white, but may be streaked or colored pink, brown, and even black. Rutland and other places in Vermont produce more than half the marble quarried in the United States. The deposits extend into Massachusetts and Connecticut. Rutland marble is white or blue gray. Some of it is so fine and white that it can be used for statuary. Most of it, however, is used for buildings. It is taken from the quarries in great blocks, which are sawed into slabs.

Georgia and Tennessee rank next to Vermont in the production of marble. Georgia has the finest and whitest marble in the United States. The quarries near Knoxville, Tennessee, produce beautiful pink marble. California, Colorado, and other western states have marble quarries, and there are great undeveloped deposits in other parts of the Cordilleran region.

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Marble quarry, Tennessee.

Loading granite on sloops.

Slate is a fine clay hardened under heat and heavy pressure. It splits readily into layers. In a few places slate is mined like coal, but it is usually quarried like marble and other stone. Blocks of slate are cut from the solid rock by machines and split into slabs by wedges. Sometimes it is blasted, care being taken not to crack it. Then it is split into layers and cut into regular sizes for the market.

Slate is very useful for roofs because it cannot burn, and because water and frost do not affect it. Slabs of slate are used for paving stones and flooring, for lining walls, for billiard tables, electric switchboards, and blackboards. The chief slate quarries are in Pennsylvania, Vermont, Maine, Maryland, Virginia, and New York.

Granite is one of the hardest and most durable stones. It is used for buildings and monuments. There are large granite quarries in Vermont, Massachusetts, Maine, New Hampshire, California, and several other states.

Sandstone is found in many states. The leading sandstone states are New York, Ohio, and Pennsylvania.

Limestone is the most widely distributed of the building stones. The most valuable limestone for building purposes is the Oölitic limestone of Indiana. Limestone is crushed for making stone roads, and large amounts are used for making lime and cement, and in the manufacture of pig iron.

Portland Cement. Cement is made from limestone and clay. It is used to make cement walks, foundations for paved streets, and mortar in buildings. After the cement has set it is not affected by fire, frost, or water. Entire buildings are made of concrete, which is an artificial stone made by mixing crushed rock or gravel, sand, and cement together. Pennsylvania produces more cement than any other state. Other leading states are Indiana, California, Kansas, and Illinois.

Salt. Salt is one of the most useful minerals in the world. Men and animals need it with their food. It is found almost everywhere in the land as well as in the water of the ocean. In places it lies as a crust on the surface of the ground, as where salt lakes dry up in the Great Desert. Beneath the surface there are layers of rock salt thousands of feet thick. They were formed ages ago when parts of the sea were enclosed by the land, and the water evaporated, leaving layers of salt upon which rock and earth were afterwards deposited.

No other country produces so much salt as does the United States. The principal salt works are in New York and Michigan. There are deposits also in Ohio, Kansas, Louisiana, Wyoming, and other states. In some of these states there are wells of natural brine. In Utah salt is made by evaporating the water of Great Salt Lake. Where the salt is in layers far below the surface, water is allowed to flow upon the salt and dissolve it. The brine

thus made is pumped to the surface. The water is then boiled off in iron pans and crystals of salt are left. Fine grades of salt are used for table and dairy purposes, and the coarser grades are used for feeding cattle, and salting fish, pork, beef, and other meats.

Sulphur. Sulphur or brimstone is a yellow substance. It is used for bleaching, as a medicine, in making matches, and it is burned to disinfect houses by its fumes.

Louisiana has one of the largest deposits of sulphur in the world, the only other deposit of equal importance being in Sicily, a volcanic island near Italy. In Louisiana the sulphur is secured by drilling wells through which several pipes, one inside the other, are driven down to the beds of sulphur. By means of steam forced down through one of the inner pipes the sulphur is melted; by means of compressed air blown through a small pipe inside the steam pipe, the melted sulphur, mixed with hot water, is forced up to the surface of the

Pumping molten sulphur from underground deposits, Louisiana.

ground. There it is allowed to settle in tanks. The sulphur thus obtained is almost pure.

Soda. One of the most important uses of salt is in making washing soda and baking soda. Syracuse, New York, is the center of this industry. Soda is found in the natural state, the largest deposits known being in California, at Owen's Lake, and other lakes. On account of its impurities natural soda is less used than that made from salt.

Borax. Borax is a mineral somewhat like salt and soda. It is found crude in the Mohave Desert in California and in other desert regions of the Western States. It is used for laundry purposes, as a medicine, in soldering, in glazing earthenware, and in coating bath tubs, cooking utensils, and other iron ware with enamel.

Phosphate. In the southeastern United States are beds of phosphate rock. This rock when ground is an excellent fertilizer for growing crops. Florida furnishes more than half the American supply; Tennessee ranks second, and South Carolina third. There are large fertilizer factories at Charleston, South Carolina, and Camden, New Jersey. The United States produces more phosphate than any other country.

Mica. Mica is a mineral formed in scales or layers. Transparent sheets may often be split off. It is used for lamp chimneys and stove doors. Small pieces are made into spangles. When ground to powder it is used to give a frosted appearance to wall paper, pictures, toys, and other objects. In our country there are important mines in North Carolina, South Dakota, and New Hampshire.

Asbestos. Asbestos is a mineral with long fibers that can be made into a sort of cloth. It is fireproof and is used to cover furnaces and pipes. It is used for roofing, plastering walls, packing safes, in gas stoves, and

A phosphate mine.

for theater curtains. Considerable quantities are found in Vermont, Georgia, North Carolina, and Wyoming.

Questions

1. Where are the principal iron mines of the United States? Which cities are great iron and steel centers?
2. Which states rank high in production of copper? Of lead? Of zinc? What are the chief uses of copper?
3. Which states lead in the manufacture of clay products?
4. What are the uses of limestone? Of salt?

Exercises

Collect specimens of the most important minerals and be able to tell them apart.

On a map of the United States indicate the location of the chief mineral deposits.

CHAPTER VII

FORESTS AND FOREST PRODUCTS

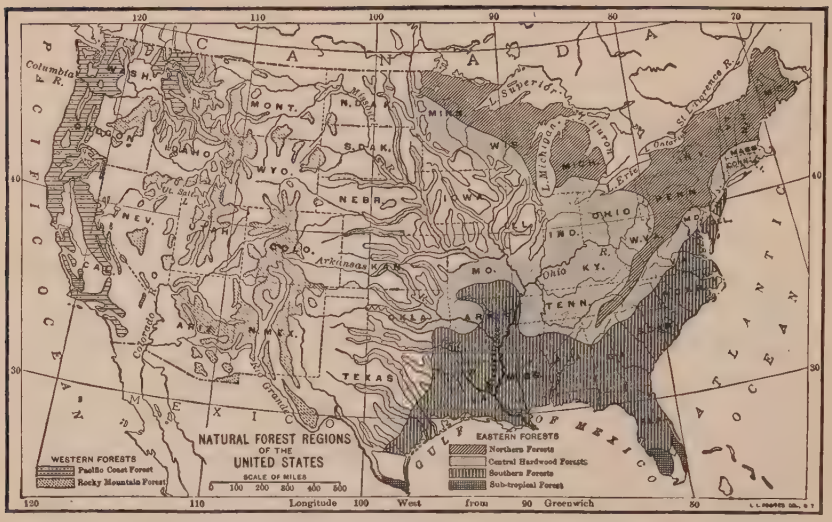
Nearly all of the country east of the Mississippi was formerly covered with valuable forests. Most of the region west of the Mississippi and east of the Rocky Mountains was open country. In this belt, the chief forest areas are Minnesota, the Ozark Mountains, and the Gulf Coast Plain. In the Prairie Plains of this belt, the only woodlands are narrow strips of timber along the streams. The Great Plains are mainly too dry for forests. The western slopes of the Rocky Mountains have sufficient rain for trees, and are therefore forested. The greater part of the Plateau belt is treeless, the vegetation consist-

A cottonwood grove bordering a river.

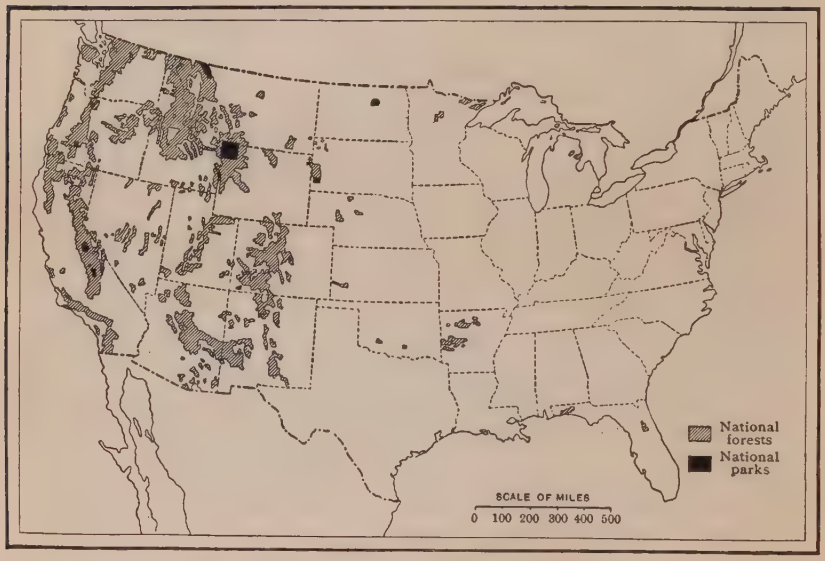
ing mostly of bunch grass, sage brush, greasewood, and cactus. Some of the highest ranges, however, of this region are covered with forests, which are of great value in conserving the water from snow and rain for irrigation. The western slopes of the Pacific Ranges have abundant rainfall, and on the rainy slopes of the Cascade Mountains, Sierra Nevada, and Coast Ranges are the greatest forests of the United States. The highest peaks of the Cascade, Sierra Nevada, and Rocky Mountains are too cold for the growth of trees. The climate and plants of these mountain summits are like those of the polar regions. The trees are dwarfed by cold, and although they may be a century old, are only a few feet high. Only mosses, lichens, rushes, and a few quick growing flowers live in these places. The line that marks the upper limit of trees upon mountain slopes is called the timber line.

Timber line, the upper limit of trees.

Forest Regions. The forests of the United States are grouped into five sections. The Northern Forest lies in the northeastern part of the country, occupying New



Natural forest regions of the United States.



National forests and national parks in the United States. The combined area of the national forests is about 250,000 square miles.

England, the Great Lakes region, and the Appalachian Mountains. Along these mountains this forest region extends far south of the main body. The Southern Forest is located mainly upon the Atlantic Coast Plain and the Gulf Coast Plain. The Central Hardwood Forest lies mainly in the Ohio Valley, in the Ozarks, and in Texas. The belt of forests in the Rocky Mountains con-

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Felling a giant tree.

stitute the Rocky Mountain Forest. The Pacific Coast Forest includes the forests upon the slopes of the Pacific Ranges.

Pacific Coast Forest. Most of the trees of the Pacific Coast Forest are softwoods or evergreens, such as firs, pines, and hemlocks. The Douglas fir, or Oregon pine, as

it is also called, is the largest and most important tree. These trees attain a height of 300 feet, and the trunks measure from 2 to 7 feet in diameter. The Douglas fir furnishes most of the lumber cut in the Western States. It is in demand for masts of ships and for bridge timbers, as well as for building purposes. The largest trees are in Washington and Oregon. The redwood in the Coast Ranges and the "bigtrees" in the Sierra Nevada are giant trees found nowhere else in the world. Both are beautiful, cone-bearing evergreens, with trunks rising 200 feet to the lowest branches, and lifting leafy tops a hundred or a hundred and fifty feet higher. The redwoods are being rapidly cut down by lumbermen, the wood being especially desired for shingles. The "bigtrees" grow only in California, in clumps scattered among forests of Douglas fir, pine, and other trees. The best known trees are those in the Mariposa Grove near the Yosemite National Park, and those in the Mammoth Grove near San Francisco. These trees grow to a height of about 300 feet. The largest trees are believed to be twenty-five centuries old. They are protected from destruction by California and the United States government.

Rocky Mountain Forest. The forests of the Rocky Mountains are not nearly so dense as those of the Pacific Ranges, nor are the trees so valuable. About one half of the trees of the Rocky Mountain Forest are lodgepole pine. Many of these forest tracts are more valuable for storage of water for irrigation than they are for lumber.

Northern Forest. The trees of the Northern Forest are mostly pine, spruce, fir, hemlock, and cedar. Among these cone-bearing trees are some hardwoods, mainly beech, maple, and birch. The white pine was the most common and most valuable tree of the Northern Forest. Most of these trees have been cut down for lumber, but

there are still large quantities of white pine in Minnesota, Wisconsin, and Michigan. In many of the swamps of the region the tamarack or larch is common. This beautiful tree has needle leaves and bears cones; but, unlike nearly all of the coniferous trees, it is deciduous—that is, it sheds its leaves in the fall.

Vermont, New York, and Ohio have great groves of maple trees. In spring, when the sap is flowing in the

Sugar maple grove, Vermont.

trees, workmen bore a hole in the trunk of each tree and day after day collect the sweet, watery sap. This is boiled in great kettles and made into syrup or sugar. The wood of the sugar maple is hard and white. It is used for floors, furniture, and many other things. In some trees the wood is dotted with tiny knots, and it is called bird's eye maple. This is in great demand for making furniture.

Spruce is ground into wood pulp, from which cheap paper is made. Hemlock also is used for wood pulp. The manufacture of wood pulp is carried on mainly in the Northeast, where there is abundant water power.

New York makes most wood pulp. Glens Falls and Watertown, New York; Bellows Falls, Vermont; and at Bangor and other towns in Maine are leading centers of this industry.

Logs for wood pulp.

Central Hardwood Forest. The most common trees of the Central Hardwood Forest are oak, hickory, chestnut, walnut, butternut, elm, and other hardwoods. Of these the white oak is the most valuable. Like all oaks its fruit is an acorn. The wood is strong and durable, and is used in cabinet making and carpentry wherever a strong and beautiful wood is needed. When the logs are cut into quarters, before sawing into boards, the grain shows beautiful figures peculiar to quartered oak. Walnut is a beautiful wood much used in cabinet making. Hickory is tough and strong, and is used extensively for tool handles and spokes of wheels. Most of the fine hardwood forests north of the Ohio River have been cleared. The chief hardwood forests are in West Virginia, Tennessee, Kentucky, and Arkansas. One of the most beau-

tiful trees of our hardwood forests is the dogwood, which, in spring, before its leaves attain full size, is crowned with snowy blossoms.

Southern Forest. The Southern Forest extends from New Jersey to eastern Texas, occupying the coastal plains. Yellow pines are the chief trees. Yellow pine lumber, which is used extensively in building, comes from these trees. The wood is stronger and heavier than white pine, is yellowish in color, and resinous. The name, yellow pine, is applied to many species of pines, chief of which are the longleaf pine, swamp pine, loblolly pine, and shortleaf pine. From many of the yellow pines the sap is extracted and made into turpentine, pitch, tar, and rosin. These products are known as naval stores. The sap is collected in cups as it flows from cuts made in the bark. It is heated in a copper vessel, called a still, to separate the gum or rosin from the turpentine, a white, watery liquid used to mix paints and to dissolve rubber and gums. Rosin is mixed with tallow in making brown

A "turpentine farm."

soap, and is also used in cheap varnishes and in medicinal ointment. From the roots and stumps of pine trees tar is obtained. It is somewhat like asphalt. The wood is roasted, and the tar that oozes out is collected in iron pans and poured into barrels. It is used for covering roofs and coating the seams in the decks and hulls of ships. Tar is made chiefly in Virginia, North Carolina, Georgia, Florida, Alabama, and Mississippi. Florida produces most turpentine and rosin, Georgia ranking next.

A turpentine still.

The live oak grows in Virginia and the states farther south. Its foliage is evergreen, and its hard, heavy wood furnishes knees and ribs of ships.

The palmetto is a small palm which grows in the southeast. It has fan-shaped leaves, which are made into palm leaf fans. The wood is used for piles and wharves, because it does not rot under water.

The bald cypress, growing in southern swamps, is a cone-bearing tree, but not an evergreen. It has a massive trunk, spreading branches, and sometimes is 150 feet high. Its lumber is very durable, even in the pres-

ence of moisture, and therefore is used for roofs, tanks, boats, and greenhouses. Like other trees in the South, the cypress is often overgrown and draped by Spanish moss, whose long, gray stems and leaves hang in fantastic festoons and garlands from its branches.

The holly is a southern tree, with glossy, dark green leaves and bright red berries. The mistletoe, like the Spanish moss, lives upon other plants. It grows mostly upon oak and apple trees, and bears white waxen berries. Like the spruce and other evergreens of the Northern Forest, the holly and mistletoe are cut at Christmas time and shipped to the cities.

Lumbering. For many years the Great Lakes region was our greatest lumbering district; but to-day, although this section furnishes considerable lumber, our leading sources are the Southern states and the Pacific states. Washington is our chief lumber state, and Louisiana

Selling Christmas trees, City Hall, Philadelphia.

ranks second. Other leading states are Mississippi, North Carolina, Oregon, Texas, and Arkansas. The three most important kinds of lumber are yellow pine, Douglas fir, and white pine. So great is our lumbering industry and so wasteful are many of our methods of lumbering and manufacturing of lumber and other wood products that three times as many trees are cut down every year as grow to take their place.

A train load of logs.

In the Northern Forest lumbering is carried on in winter, when the logs can be hauled over the snow on sleds drawn by horses or oxen to the frozen streams. The spring freshets float the logs down the rivers to the sawmills. It takes courage, strength, and skill to drive thousands of loose logs down stream. Sometimes they jam together, and will not move until the lumbermen, leaping from log to log, loosen them with long, iron-pointed poles. A lumberman will balance himself upon

Lumbering on the upper Connecticut.

a log, standing erect as it rolls and rushes down stream. Minneapolis, Minnesota, is the greatest lumber market in the world. Other important lumber centers in the North are Bangor, Maine; Burlington, Vermont; Menominee, Michigan; Duluth, Minnesota; and Chicago, Illinois. Here and elsewhere logs are sawed into boards and timbers and made into doors, windows, lath, and other building materials.

The mild climate of the Pacific coast permits lumbering the year round. There is no snow, streams are few, and the logs very large; so railroads are built into the forests, and the logs are loaded upon flat cars. There are great sawmills at Tacoma, Seattle, and Spokane, Washington; at Portland and Astoria, Oregon; and at San Francisco. From the forests of Washington rafts are floated upon the Pacific Ocean to sawmills as far south as San Diego, California. Many of the lumbermen in the southern forests are negroes. The logs are gen-

erally cut into boards on the spot by steam mills that can be moved from camp to camp. The lumber is then shipped direct to lumber yards and factories throughout the country, or to lumber mills at Atlanta and Savannah, Georgia; Mobile and Montgomery, Alabama; Pensacola, Florida; Houston, Texas; and elsewhere.

Among the chief centers for oak and other hardwoods are Nashville, Memphis, and Chattanooga, Tennessee; Vicksburg, Mississippi; and Little Rock, Arkansas.

Forest Fires. Our forests are not only cut down by

A log raft on the Pacific Ocean.

lumbermen, but immense tracts are burned by forest fires. Such fires are started usually during a dry spell by sparks from locomotives, by the fires of careless hunters and campers, and by other means. Forest fires burn not only the trees and underbrush, but the dry leaves and roots which largely compose the forest soil. Forest fires occasionally destroy villages, and even cause the loss of human lives. In a region threatened by fire the people gather by hundreds to fight the flames.

Forests and Stream Flow. The destruction of forests has a harmful effect upon drainage. Forest soil made spongy by roots holds moisture, and gives it up grad-

ually to the springs and streams throughout the year. When the forests are cut down the water from rain and melting snow pours at once into the streams, causing disastrous floods, which are followed by very low water in times of drought.

National Forests. Large forest tracts on the public land in the West have been set apart from agricultural land and formed into National Forests, which are owned and controlled by the national government. The National Forests are in charge of trained foresters, who regulate lumbering and grazing within the forests, protect them against fires, and plant saplings or seeds to replace the trees cut down for lumber or destroyed by fire. These forests will not only provide a supply of lumber, but will also regulate stream flow, so that water may be available for power and irrigation. In the Appalachians, the government is buying forests near the headwaters of the rivers, in order to secure a navigable depth of water in these streams during dry periods.

Tree Plantings. Upon the Great Plains, especially in

Planting young Douglas firs in a national forest.

Kansas and Nebraska, clumps of trees, mostly mulberry and osage orange, have been planted as wind breaks to protect the farmhouses from gales. Groves of catalpa and other rapid-growing trees are planted to supply fence posts and lumber. Some of the leading railroads are planting large groves of trees to furnish timber for

Statue of J. Sterling Morton, Nebraska City, Nebraska. This man is known as the originator of Arbor Day.

ties. In some sections of the country groves of nut trees have been planted. Texas, Louisiana, Georgia, and Florida garner large harvests of pecans. California produces large quantities of English walnuts, chestnuts, and almonds. Where trees are few they are valued more than in the states where forests abound. Nebraska, with few trees, first celebrated Arbor Day, which is now observed in almost every state.

Questions

1. What are some of the most valuable deciduous trees? The most valuable evergreen trees?
2. Where is our great hardwood forest?
3. Where are the great lumbering sections of the United States?
4. How do you account for the dense forests on the western slopes of the Pacific Ranges?
5. Why are there no forests on the plateaus of the Western States?

Exercises

On a sketch map of the United States show the forest regions. Write in each region the names of the trees growing there.

Make a list of forest products.

Collect specimens of different kinds of wood and learn to tell them apart.

CHAPTER VIII

FARMS AND CROPS

Farms. In the United States, farms vary in size from a few acres to several thousand acres. The average size is about 140 acres. There are in the United States 50,000 farms of more than 1,000 acres. Most of them are grain farms. As a rule, the very small farms raise poultry, small fruits, and garden vegetables. The greatest farming section is the Great Central Plain. There the fertile soil and level surface make agriculture very profitable. The Atlantic Coast Plain, also, is a rich farming region. In the Appalachian Highland many farms have been abandoned because the thin, rocky soil has become exhausted. Although they once produced pay-

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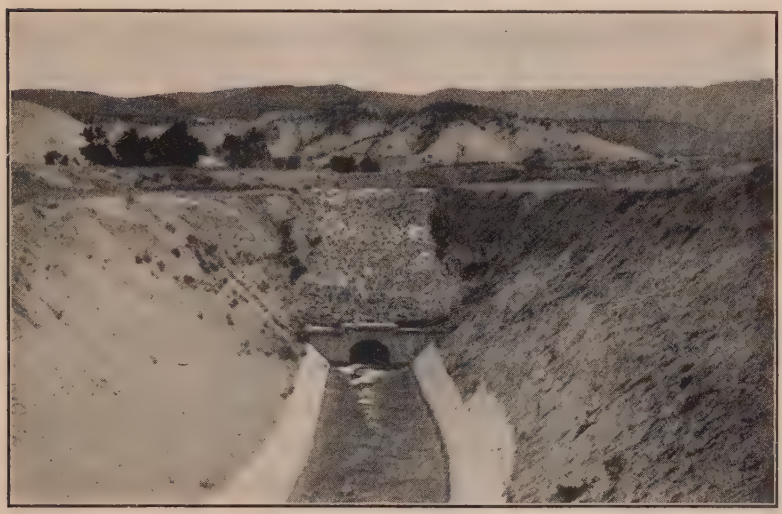
An abandoned farmhouse in a mountainous district.

ing crops of grain, it is cheaper to grow such crops on the rich soil of the Great Central Plain, where farms are large and the land level, so that machinery can be used in planting and harvesting. Many farms in New York, Connecticut, and Massachusetts have either been deserted or given over to dairying or poultry farming.



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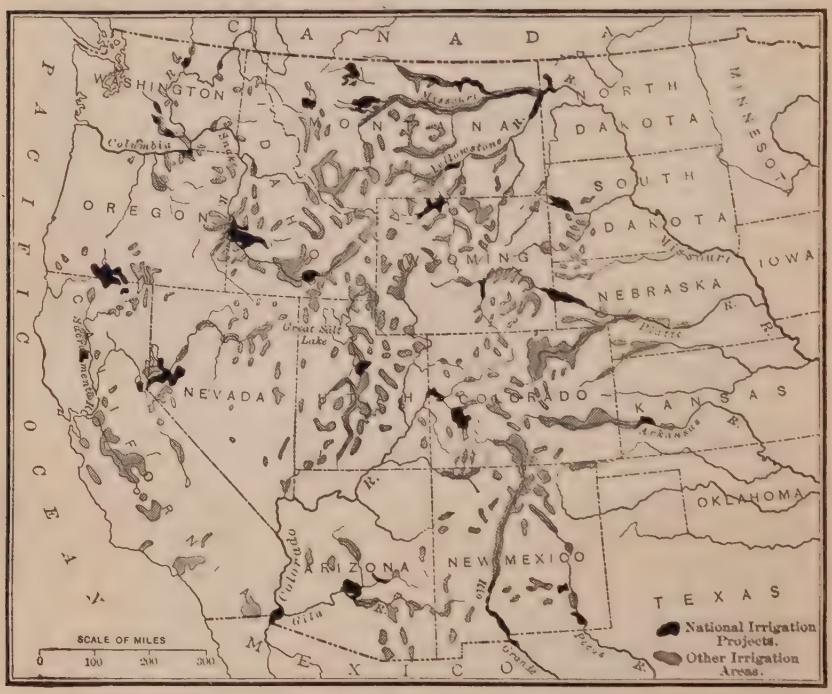
Gunnison Irrigation Tunnel. This carries the water of an irrigation canal under a mountain.

The eastern half of the United States has sufficient rain for agriculture; but most of the western half has so little rain that irrigation or dry farming must be used to produce crops. This is especially true in the Great Basin and on the highest part of the Great Plains, where there is less than 20 inches of rain yearly. The valleys near the Pacific coast, however, have farms whose fertility commands the admiration of the world.

Irrigation. In many places there are farms where the plants are watered from wells or distant streams. The water is led by long canals and ditches to the fields, and flows through furrows to the crops of vegetables, grain,

and fruits. This way of watering crops is called irrigation. The government of the United States, as well as many companies, spends millions of dollars every year to increase the acreage of farming land in the deserts by building dams across rivers and digging irrigation canals to carry water from the streams to the land. Throughout the dry regions of the Cordilleran Highland the streams, from the Columbia in the north to the Colorado in the south, have been tapped to irrigate fields and orchards. Many of the dams built to store



Irrigation regions of the United States.

the water of the rivers for irrigation, such as the Roosevelt Dam across the Salt River in Arizona, are marvels of engineering skill.

Dry Farming. Dry farming is carried on in the semi-arid sections of the United States. Only those crops

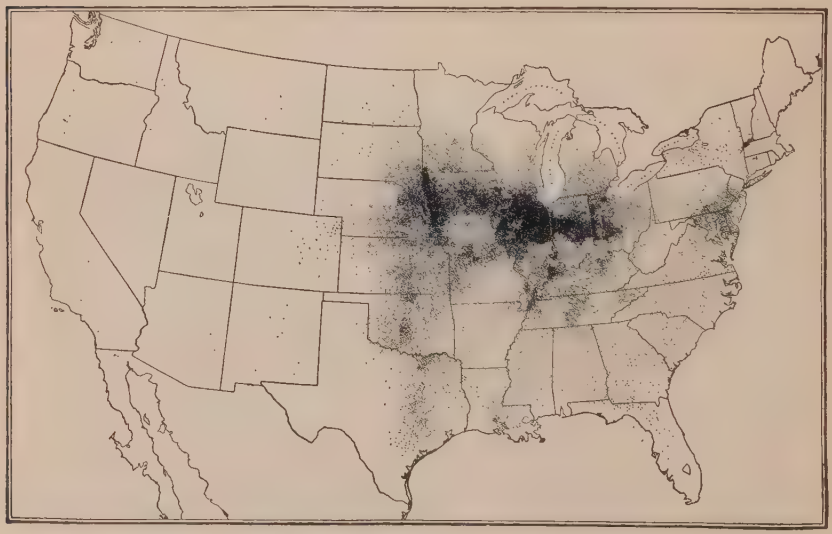
that can thrive with little moisture are grown; and the soil is cultivated by methods that secure the fullest use of the small rainfall. The soil is plowed deep and pulverized well so that all the rain will readily soak into the ground. By shallow cultivation after each rain a layer of loose, fine soil, called a soil mulch, is formed. The soil mulch acts as a blanket to prevent the rapid evaporation of the moisture in the ground.

Kinds of Crops. Nearly all the crops of the United States are grouped into the following classes: Cereals, or grains, hay and other forage crops, fiber crops, fruits, sugar crops, and vegetables. In and near cities flowers are a crop of considerable value. Tobacco and peanuts are crops of some importance not listed in the above classes. Cereals form the principal vegetable food of the human race. Corn, wheat, and oats are the leading cereal crops. Timothy, clover, and alfalfa are the chief forage crops. Cotton is the only fiber crop of great importance in the United States. Sugar cane and sugar beets are the principal sugar crops. Apples, peaches,

Shocks of corn. Notice the pumpkins.

oranges, grapes, and strawberries are some of the chief fruits. Potatoes are the chief vegetable crop.

Corn. Maize, or Indian corn, is the chief crop in the United States. It is an American plant, and was unknown to the Old World until Columbus discovered America. The Indians cultivated it in a rude way, and shocks of corn, standing in rows along our autumn fields, remind the beholder of the Indian's tepee or tent. Corn thrives from the Gulf of Mexico as far north as the Great Lakes. It does not grow well along the extreme northern border, for there the summer is too short and the nights are too cold for it to ripen. It is chiefly used for feeding horses, cattle, hogs, and poultry. A kind of maize called sweet corn is cooked before the kernels harden on the cob. It is a favorite garden vegetable and is often canned. Hominy, cornstarch, glucose, and corn syrup are made from field corn. A small variety is popcorn, the kernels of which burst into white masses when heated.



Corn production in the United States. One dot equals 100,000 bushels.

Illinois and Iowa are the leading states in the production of corn. These two states, together with Missouri, Nebraska, Indiana, and Ohio, grow more than half of the entire corn crop of the United States. Texas, also, produces a large yield of corn. Most of the fertile land of the South is devoted to cotton instead of corn.

The manner of harvesting differs. Usually only the ears are harvested, and the stalks, left standing, form winter pasture, for live stock. However, a great part

A gang plow and traction engine.

of the crop is cut and gathered into bundles, or shocks. Later, the corn is husked by hand; or the stalks, leaves, and ears are placed in a machine, called a shredder, which husks the corn and shreds the stalks and leaves into small pieces. This shredded fodder is stored in barns and fed to farm animals during the winter. Along the northern part of the United States much of the corn is cut while green and stored in silos.

Wheat. Wheat is not as large a plant as corn, and looks more like a grass. In this, it resembles oats, rye, and barley. The grain of these plants when ripe is separated from the husks or chaff and from the stalks or

Wheat production and chief flour-milling centers of the United States. One dot equals 50,000 bushels of wheat.

straw by threshing. Wheat, although ranking second among the cereals in the United States, is regarded the world over as the most valuable of all grains, and is the most widely grown. The principal kinds of wheat sown in the United States are winter wheat and spring wheat. The winter wheat is sown in the fall. The wheat begins growth at once, keeps alive through the winter, and ripens in the following summer. The other, called hard or spring wheat, is sown in the spring, and ripens the same year. North Dakota, Kansas, Minnesota, Nebraska, Indiana, South Dakota, Washington, Ohio and Missouri are the leading wheat states. Spring wheat is grown chiefly in Minnesota, North Dakota, and South Dakota. The valley of the Red River, lying in these three states, is the greatest wheat section of the United States. This fertile region is the basin of the great glacial lake, Lake Agassiz, which once occupied the area through which the Red River now flows.

Sowing grain.

In the Red River Valley the plowing is done in October and November. Gang plows drawn by horses or traction engines plow the ground. In April, after the heavy snows of winter have disappeared, the ground is harrowed and the seed is then sown by machines called drills. The grain ripens in July and August, and is harvested by reapers, which bind the grain with twine into sheaves. About a dozen sheaves are placed together in a shock, and left in the field until the grain and straw are dry. Then the wheat is hauled to the threshing machine, which separates the grain from the straw.

Other Grains. Oats rank high in value as a cereal. They are fed mainly to horses and poultry, and are used for making oatmeal. Illinois and Iowa are the leading states, producing about a quarter of the entire crop. Rye is used in making rye bread, and malt, which is an ingredient necessary for brewing beer. California, Minnesota,

A rice field, Texas.

North Dakota, Wisconsin, and South Dakota lead in the production of this grain. Buckwheat is grown mainly in Pennsylvania and New York. Rice is a cereal which grows in the warm parts of the United States, though not so abundantly as in the warm parts of Asia, where it is the chief food. It grows in land which can be flooded. Louisiana, Texas, and Arkansas produce almost the entire crop of this country.

Questions

1. Which are the chief cereal crops?
2. Which states comprise the corn belt?
3. Which are the leading wheat states?
4. Which states rank high in yield of both wheat and corn?
5. What uses are made of corn?

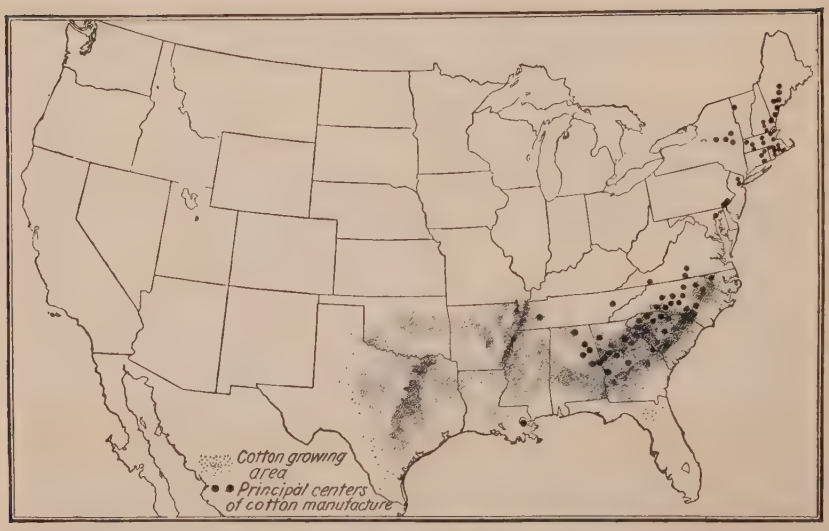
Forage Crops. Hay, pasture grasses, and other plants whose stems and leaves serve as food for farm animals are called forage crops. On the mountains and plateaus

of the western states and on the dryer portions of the Great Plains the herding industry depends upon the wild grasses that grow in these regions. In the eastern part of the country, blue grass is one of the best pasture grasses. The Ohio Valley has famous pastures of this grass. Timothy and clover are grown extensively for hay in all sections where horses and cattle are raised. Alfalfa is the leading hay crop of the western states. Oats are sometimes cut while green and used as hay.

A haying scene.

Corn silage is an important forage crop. The corn is cut while the leaves are green and stored in silos, in which it keeps fresh for months. The green leaves and soft grains furnish a food that animals relish. Millet, sorghum, and cowpeas are other forage crops.

Cotton. Next to corn, cotton is the largest and most valuable crop in the United States. Cotton is the most important vegetable fiber in the world, and the United States grows about twice as much as all other countries.



Cotton region and chief centers of cotton manufacture.

Cotton is a woody plant, about three feet tall, and bears pretty yellow or white flowers, which turn red and produce a boll, in which are the seeds. To the seeds are attached the white cotton fibers. These fibers are somewhat like the floss of the milkweed seeds.

The principal cotton state is Texas, which grows one fourth of the American crop. Georgia, Mississippi, Alabama, South Carolina, Arkansas, and Oklahoma are the other leading cotton states. Galveston is the greatest cotton port in the country. Mobile, New Orleans, and Savannah are other important cotton ports. Excepting New Orleans, St. Louis and Memphis are the largest cotton ports on the Mississippi River. From Houston, Texas, large quantities of cotton are shipped by rail and water. The best cotton grows on islands and lowlands of South Carolina, Georgia, and Florida. It is called sea-island or long staple cotton. The fibers are long, measuring 2½ inches, and are easily pulled off the seed. Upland, or short staple cotton, which furnishes

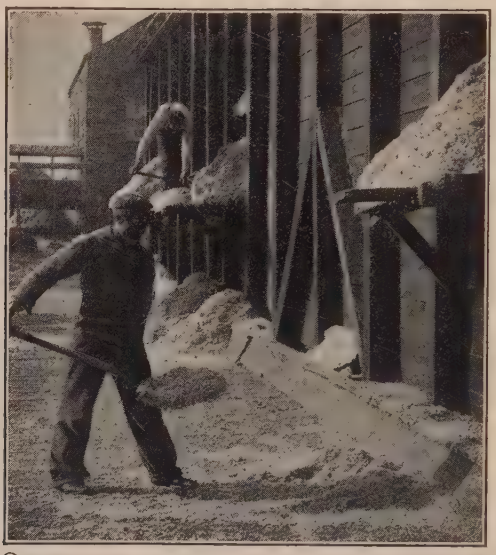
most of our cotton crop, grows on the uplands of the cotton states. The fibers are about half as long as those of sea-island cotton.

Little cotton grows more than 36° away from the Equator, because it requires six or seven months of warm weather, and the summer beyond that latitude is too short. Seed is sown in March in Texas, and in May in the Piedmont belt of North Carolina. The flowers appear from May to July, and the bolls begin to ripen in August, and are picked during the fall months. The

Bales of cotton.

plant is constantly flowering and fruiting, and picking continues until frost. Picking is done by hand. It is light work, and women and children as well as men are engaged in it. It requires care not to drop the cotton and to keep it clean from dry leaves. Most pickers gather about 100 pounds a day. Not only the farm hands but the negroes of the towns and villages go to the plantations daily to pick cotton. The profitable cultivation of cotton

depends upon separating the fibers of cotton from the seed. The machine used is called a gin, an abbreviation of engine. It was invented by Eli Whitney in 1792, and although much improved the principle is still the same. A number of notched steel disks like coarse circular saws catch the fibers and tear them from the seed. Then the fibers are brushed off the disks. Another kind of gin consists of a pair of rollers which catch the threads and pull them from the seed. The cotton fiber is very loose



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Shoveling cotton seed into a cottonseed mill.

and bulky, and is packed by hydraulic presses into bales weighing 500 pounds. The bales are covered with coarse bagging and then shipped to the factory towns of this and other countries to be manufactured.

Cotton is spun into thread for sewing, and woven into cloth. The seeds are placed under great pressure and cottonseed oil is extracted. This is a substitute for olive oil, and is used instead of lard for cooking. It is also

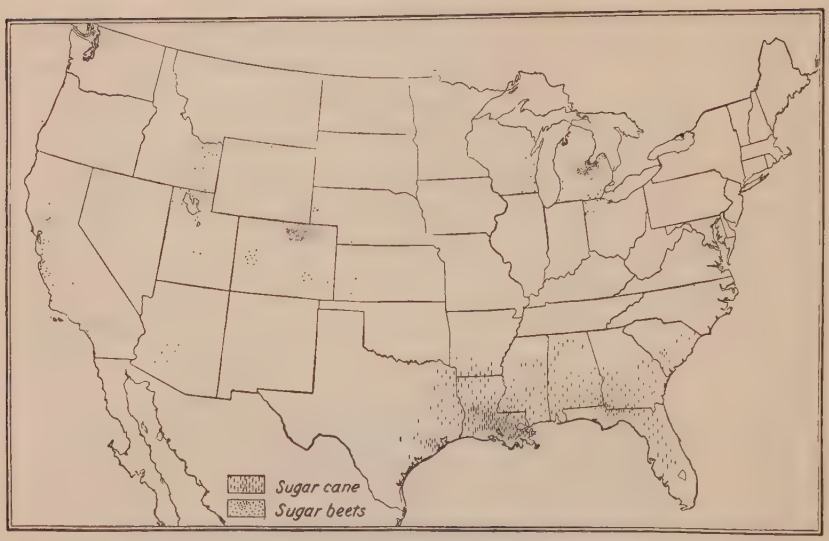
used in making soap, candles, and phonograph records. The refuse seed after the oil is extracted is called oil cake. When ground, the oil cake becomes cottonseed meal. This meal and oil cake are valuable food for cattle. Cottonseed meal is largely used as a fertilizer, enriching the very soil on which it was grown. The fiber is the principal product of the cotton plant. The others are called by-products.

Flax. The United States is one of the four principal countries that raise flax, a grass-like plant bearing a pretty blue flower. In other countries flax is raised mainly for the fibers which are obtained from the stalks. From these fibers linen is made. In our country the flaxseed is the valuable part. From it linseed oil is pressed. This oil is used in making paints, varnish, oilcloth, and linoleum. North Dakota, South Dakota, and Minnesota produce almost the entire crop.

Questions

1. Which states lie in the cotton belt?
2. Which is the best kind of cotton? Where is it grown?
3. What is the cotton gin? What effect has it had upon the cultivation of cotton?
4. What products are obtained from the cotton crop?
5. Which is the leading cotton state? Which city is the chief cotton port?
6. What products are obtained from flax? For which product is it grown in the United States?

Sugar Cane. Sugar is another great food product of our country. Most of it is made from sugar cane, the rest being made from beets. Sugar cane is a grass which looks somewhat like corn, but does not bear ears. It grows 6 to 12 feet high, and has a plume at the top. In planting sugar cane, the stalks are cut into pieces,



Sugar-cane and sugar-beet regions of the United States.

each of which has a bud that grows into a new plant. The sugar is in the juice or sap of the stalk. After the cane is cut, it is pressed between massive steel rollers to press out the juice. By boiling this, brown sugar and molasses are obtained. The crude sugar is then shipped to sugar refineries where it is converted into refined sugar. Sugar cane grows in warm southern countries near the sea. Louisiana produces almost all the sugar cane grown in continental United States. Porto Rico produces about an equal amount, and Hawaii much more.

Sorghum resembles sugar cane, but is hardier, and can be grown much farther north. From this plant a sweet sap is obtained that is made into molasses. Sugar, however, is not made from sorghum.

Sugar Beets. Sugar beets are even hardier than sorghum. There are great fields of sugar beets in California, Colorado, Michigan, Utah, Idaho, and Wisconsin. The first three states produce nearly three fourths of the American crop. The beets are hauled to factories,

where they are washed and sliced by machinery. The sugar is dissolved by hot water. The solution is purified and evaporated into sugar. Europe produces almost all the beet sugar.

Apples and other Orchard Fruits. The apple is our chief orchard fruit. It grows well, except in the warm South and the cold North. Washington and Oregon, all the states of the Lake region, Vermont, and New Hampshire have fine apple orchards. New York ranks first in the yield of apples, the lake plain south of Lake Ontario being the greatest apple district in the United States. Apples from the great orchards of the Ontario lake plain, the Hudson Valley in New York, the Bitter Root Valley of Montana, the Hood River Valley of Oregon, and many sections of Iowa, Missouri, Washington, Colorado, and other states are shipped abroad, especially to England.

Pears, cherries, and plums are raised in the sections that produce apples. Peaches grow best in the southern

An irrigated field of sugar beets.

An irrigated apple orchard.

states. In the northern states they do well only in places that are free from unseasonable frosts. The leading peach states are California, Georgia, and New York.

Subtropical Fruits. Oranges, lemons, limes, grapefruits, dates, and pineapples are subtropical fruits that grow in the warmest portions of the United States. Large crops of citrus fruits—oranges, lemons, limes, and grapefruits—are grown in California and Florida. Some citrus fruits are grown along the Gulf Coast. California ranks first in subtropical fruits, and Florida second. Florida raises more grapefruits and limes than any other state, and most of the pineapples grown in the United States come from southern Florida.

The Leading Fruit State. California is the leading fruit state. The state has so wide a range in latitude and its surface varies so greatly that several kinds of climate exist; and sections well suited to every kind of fruit can be found somewhere in the state. Southern California is the great citrus section of the state, although in the

foothills bordering the Great Valley there are citrus orchards, even in northern California. Middle California, just south of the Golden Gate, produces the largest grape crops of the United States. About half are made into wine, and almost half are dried for raisins.

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An orange orchard, California.

The yield of raisins is more than enough for the entire American supply. Cherries, peaches, plums are raised, and, like the other fruits, are sent to all parts of the United States by fast trains of refrigerator cars. In California the olive has been cultivated since its introduction by the monks when this state was Spanish territory.

Small Fruits. Strawberries, raspberries, blackberries, currants, gooseberries, and other small fruits are produced in the fruit-growing states, and thrive in the states that are too cold for orchard fruits. By far the most important of the small fruits is the strawberry. More than half the cranberry crop in the United States

comes from bogs in Massachusetts, near Cape Cod. Other cranberry bogs are found in New Jersey and Wisconsin.

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Loading a refrigerator car.

Market Gardening. Near the large cities market gardening is a profitable occupation. New Jersey, situated between New York City and Philadelphia, is largely given over to it, as are Long Island and other parts of New York State, eastern Pennsylvania, Delaware, and Maryland. Maine and eastern Massachusetts supply the Boston markets. Maine corn and Boston lettuce are shipped to most eastern cities. The districts lying near Chicago, St. Louis, Cleveland, Cincinnati, Denver, and San Francisco raise large crops of vegetables and fruits for these cities.

The demand for fresh fruits and vegetables is constant. Florida supplies strawberries, tomatoes, aspara-

Picking cranberries.

gus, peas, and other fresh vegetables to the great hotels at St. Augustine, Jacksonville, Ormond Beach, and Palm Beach, and also ships them to the northern cities, where they command high prices. Later in the year, when the supply from Florida stops, Georgia, North Carolina, Virginia, Maryland, New Jersey, New York, Maine, and even Canada in turn supply the market. Thus strawberries and vegetables, like cauliflower and celery, are in market from Christmas through spring and summer until late the next fall. In winter, Chicago and other cities of the Mississippi Valley are supplied with fresh fruits and vegetables from the Gulf states. Watermelons, which grow throughout the southern and middle sections, do especially well in Georgia, Kentucky, Arkansas, and Colorado. In Colorado, in the valley of the Arkansas River, the Rocky Ford cantaloupe is grown and shipped to all parts of the United States.

Tobacco. The United States is the leading country in the growth of tobacco, producing more than two fifths of the entire crop of the world. Tobacco is a rank plant

A tobacco warehouse, North Carolina.

several feet tall, with large, coarse leaves and long, pink flowers. After the leaves begin to dry they are either cut from the stems or else the entire plant is cut and hung in barns to dry. The leaves are then stripped from the stems and stacked in piles. Tobacco is often kept, or cured, several years before being manufactured. Connecticut and Florida produce the finest tobacco, but not in large quantities. Kentucky is the leading state, North Carolina and Virginia ranking next, and these states produce about three fifths of all the tobacco raised in the United States. The rest comes mostly from Pennsylvania and the Ohio Valley.

Potatoes. The value of the potato crop is exceeded only by maize, wheat, oats, cotton, and hay. New York produces the largest crop; Michigan, Pennsylvania, Maine, and Wisconsin ranking next.

Other Crops. Peanuts are grown in Virginia, North Carolina, and other southern states. The pods grow under-

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A nursery, Rochester, New York.

ground, and when ripe the plants are pulled up and placed in piles to dry. After the peanuts are gathered they are shipped to all parts of the country. Hops, used in brewing beer, are grown principally in Oregon.

In the vicinity of large cities, especially New York, Philadelphia, and Rochester, there are nurseries where trees and shrubs are grown. Greenhouses furnish foliage plants, like ferns and palms, and flowers, such as roses, carnations, and violets.

Questions

1. What are the chief fruits of the United States?
2. Which is the leading orange state? The leading apple state?

Exercises

Collect samples of different grains and be able to tell them apart.

Upon a map of the United States indicate the distribution of each of the chief crops.

CHAPTER IX

ANIMAL LIFE AND ANIMAL PRODUCTS

Wild Animals. Many years ago, when there were but few people in the United States, wild animals were plentiful. Millions of bison, improperly called buffaloes, roamed in great herds over the Great Plains. Bears lurked in the forests; herds of deer bounded through the woods or grazed over the open plains and prairies; and in the woods and streams beaver and other small animals were numerous. As settlers increased the forests were cleared, giving place to farms and towns. More and more the wild animals were hunted for food, for their skins and pelts, or because they attacked the settler's sheep or cattle, so that now, after a few hundred years

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Bison.

of one-sided warfare, most of our wild animals have been killed off or driven to less settled sections.

In Yellowstone Park and in other public and private parks about 1,000 bison are kept in captivity. In Maine the moose, our largest animal, is common. Black bears and deer are found in the Adirondacks and the Rocky Mountains. Herds of elk, deer, and mountain sheep may still be found in Wyoming and a few other western states. The ferocious grizzly bear still makes its den in remote

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A wolf hunt.

recesses of the Rocky Mountains in and near Yellowstone Park; and in the forests of the warm Southwest there are still a few panthers, or mountain lions. Wild cats are found now and then in the deep woods of the Appalachian Mountains. The coyote, or gray prairie wolf, is numerous on the plains, where it preys upon sheep and other small animals, and hence it is vigorously hunted, a bounty being paid in some states to encourage its de-

A beaver dam.

struction. The wolverine, a ferocious animal about three feet long, with shaggy, black, brown and white blotched fur and a bushy tail, is found in the Rocky Mountains.

In a few unsettled regions, like the Adirondacks and Yellowstone National Park, beaver still build their dams in the streams. In many localities, minks are killed for their fine fur, from which muffs, coats, and other fur garments are made. The porcupine, or hedgehog, is found in the northern woods. The raccoon, oppossum, rabbit, and squirrel are commonly hunted for their flesh and fur; the muskrat, fox, and skunk for the fur alone. On the western plains there are large hares called jack rabbits. Here, too, are prairie dogs, which are not dogs, but animals resembling the woodchuck. They live in burrows, and are considered a pest by the farmers, who destroy them not only because they eat the grass needed

for pasture, but also because horses are injured by stepping into the burrows.

There are more than 100 kinds of snakes in our country. Only a few are poisonous. The most dangerous is the rattlesnake, so called from the bony rattle at the end of the tail. The copperhead, so called from its color, and the water moccasin found in the southeastern swamps and bayous, are also poisonous. They all strike without coiling. Black snakes, garter snakes, and adders are not poisonous. The Gila monster is an ugly, poisonous lizard found near the Gila River.

Alligators abound in the sluggish waters along the Gulf coast. In Florida there are alligator farms, where

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An alligator pond.

these huge animals are raised for their hides, from which a beautifully marked leather is made. The warm waters of the Atlantic Ocean and the Gulf of Mexico near Florida are the home of the sea cow or manatee. It is a harmless animal about ten feet long, living in small herds and feeding on sea plants.

Insect Pests. The insects of the United States are smaller and less dangerous than those of hot countries. The house fly is so common about buildings that windows and doors are screened to keep it out. It breeds about stables and carries the germs of dangerous diseases. In many swamps, marshes, and stagnant pools mosquitoes breed. Their sting is annoying, and one kind carries the germs of malaria. Persistent efforts are made to reduce the number of mosquitoes by pouring oil upon the waters where they breed, or, better still, by draining such places.

Some insects do much harm to our plants. The Colorado potato beetle feeds upon the leaves of the potato. Farmers spray the plants with Paris green and other poisons to kill these insects. In Kansas and other western states there have been occasional plagues of Rocky Mountain locusts, usually called grasshoppers. These insects settled in fields of grain and hay and devoured the entire crops. At present little damage is done by these locusts. The boll weevil attacks the cotton boll and does damage amounting to millions of dollars every year. In Massachusetts and neighboring states the gypsy moth attacks the elm and other trees. The San José scale and other insects destroy fruit trees and vines. Farmers protect these plants by spraying them with various preparations.

Birds. There are about 750 different species of birds in the United States. The largest is the California condor. The smallest are the humming birds, of which the beautiful ruby throat is most common. The bald eagle is our national bird. There are many hawks, such as the osprey or fish hawk, the chicken hawk, and the sparrow hawk, which, like the condor and eagle, are birds of prey. Crows, although regarded as harmful birds by some farmers, do much good. The herons are large wading-birds, having long bills with which they

spear the fish upon which they feed. In Florida great flocks of beautiful white herons, or egrets, have their nesting places. Many wild birds, such as snipe, woodcock, quail, partridges, and other game birds are hunted for food. In cities the English sparrow is common. It lives in flocks and is very hardy. It is much disliked, because it is quarrelsome and drives away from parks and gardens the blue birds, robins, cat birds, and other favorite birds. The thrush and mocking bird are our best singers. The latter has its home in the South. Its color is gray and white. Although its own song is rich and musical, yet it mocks the songs of other birds. It also imitates noises like the creaking of a wagon or street cries.

Humming bird on nest.

Most of our birds fly northward in the spring to build their nests and rear their young. When fall comes they fly to the South and spend the winter there, returning northward the next spring. These journeys of the birds are called migrations. Many of the birds travel in great flocks. Some, like the wild ducks and geese, which spend

the summer far to the north of the United States, fly in V-shaped companies, the leader at the head or point, all clamoring and crying as they fly. Some birds cross the Gulf of Mexico and enter South America, going even beyond the Equator in their migration.

The bobolink is one of our most interesting birds. The male has a gaudy black and white plumage in the spring, and flies about our northern meadows with outbursts of song. When fall comes his colors change to olive-green like those of his mate. Then they fly south in flocks, feeding upon the wild oats in the marshes. It is then known as the reedbird, and is hunted as a game bird. In the South it is called the rice bird.

Preservation of Animal Life. Our wild birds and other animals are becoming so scarce that they are protected by game laws. Some forbid the killing of robins, blue birds, and others that devour insects; others protect buzzards, which clear the fields of carrion; others permit hunters to kill a limited number of deer, rabbits, squirrels, ducks, quail, and other game for a short time, and forbid hunting during the rest of the year, which is termed the closed season. The bison, the passenger pigeon, and Carolina parrakeet, have been destroyed almost entirely. Many of the others are rapidly suffering the same fate, in spite of our game laws. The United States government and some estates try to keep up the supply by breeding fish in hatcheries and by freeing birds and protecting them from natural enemies while young. Even with this restocking of forest and stream, the gun and rod of the sportsman destroy more than can be replaced.

In some large cities there are collections of wild animals and birds in zoölogical parks. There are animals of other countries besides our own. They are kept in cages or enclosures, which resemble their natural homes.

Food Fishes. The ocean waters, especially those near the coast, are the feeding grounds of great schools of fish. The cod is the principal salt-water fish. Fleets of fishing boats sail from New England ports to the Banks of New Foundland and other fishing banks along the Atlantic coast in search of cod, herring, and mackerel. Similar fleets catch the same fish in the shallow waters of Puget Sound. These fish are not only sold fresh, but are salted or smoked. Other fish, like bluefish, halibut, bass, and sturgeon, are packed in ice and sold fresh. In

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Black sea bass, California.

the spring shad and salmon ascend the rivers of both Atlantic and Pacific coasts to deposit their spawn. Great numbers are then caught. Shad are canned along the Susquehanna River. At Eastport and elsewhere in Maine herring, salmon, and sardines are canned. At Astoria, Oregon, on the Columbia River, and Bellingham, Washington, on Puget Sound, salmon are canned. In the Great Lakes the chief food fishes are whitefish,

bass, trout, and pickerel. Perch, catfish, and sunfish are common river fishes. Great catches of fish often too small or of kinds unfit for food are taken and used in making oil, glue, and fertilizer.

Other Water Animals. Oysters are found in abundance along the Atlantic, Pacific, and Gulf coasts of the United States. Small oysters, which swim freely and are called seed oysters, are taken in Long Island Sound and shipped to other oyster beds to be planted. This is one of the chief industries along the shore of Connecticut. The

Sea turtles.

oysters as they grow older fasten themselves to the bottom of the sea; and after they have grown to a sufficient size they are dragged by dredges or rakes to the surface. Baltimore is the chief port for shipping and canning oysters. Biloxi, Mississippi, ranks next to Baltimore as an oyster port. In the Mississippi River, fresh-water mussels are gathered and the pearls extracted for use as jewels. From the shells buttons are made. Large numbers of clams and lobsters are taken for food from

our coast waters. Along the shores of Florida many sponges are gathered from the sea, and large turtles are captured for food.

Exercises

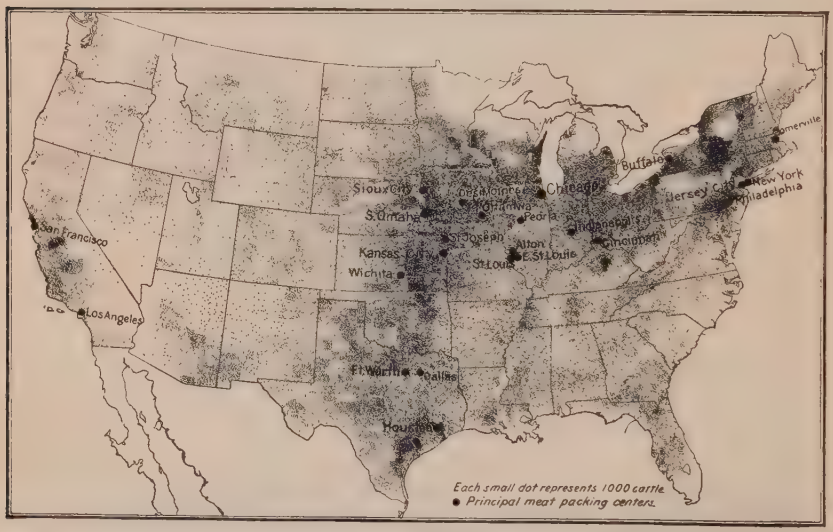
Make a list of wild animals used for food.
Name the chief fur-bearing animals.

Domestic Animals. Our wild animals used for food or clothing are of small value compared with our domestic animals. The leading domestic animals are horses, cattle, hogs, and sheep. Horses are used for pulling loads. Cattle, hogs, and sheep are our chief sources of meat. Sheep furnish wool also, and this fiber is more valuable than the flesh of these animals. Many of our farm crops are grown to supply food for domestic animals. Corn, our leading crop, is so extensively fed to animals that we export almost none of this grain.

Cattle. In the grazing lands of the Western States and in the corn belt of the Central States large numbers of cattle are raised for beef. In regions lying near large population centers most of the cattle are raised for dairy purposes. Near the large cities large herds of dairy cattle are kept. They are pastured on hilly farms, where

Dairy farm.

rich grass grows abundantly, but where the soil is too rocky for other crops. The barns are kept spotlessly clean, milking is sometimes done by machinery, and the milk is kept cool and pure. Milk is often shipped hundreds of miles to the large cities, where it is sold in pint and quart bottles. It seldom reaches the consumer until a day old. When the distance from market is too great for the profitable shipment of milk, it is sold to factories, where butter, cheese, and condensed milk are made. New York is the chief dairying state. Wisconsin ranks next. Iowa, Minnesota, and Illinois are other important centers of this industry. New England is another great dairying region.

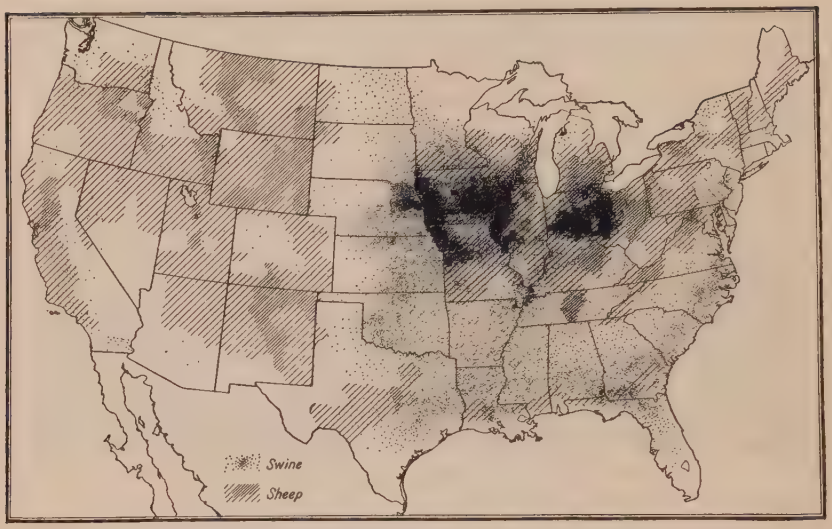


Distribution of cattle and principal meat packing centers in the United States.

On the Great Plains and on the plateaus of the Western states cattle and sheep graze over wide ranges in care of a few herdsmen. The farms of the far West are called ranches. The herdsmen who care for the cattle

Branding cattle.

are known as cowboys. They are among the most skillful horsemen in the world. Their horses, called bronchos, are small, but fleet and wiry. The cattle and horses of each ranch are marked or branded on the flank with a hot iron. The mark, which may be a design or a monogram, enables the owner to identify his own animals. Cowboys are especially skillful in the use of the lasso or lariat. This is a long rope with a noose at one end, and the other fastened to a ring of the saddle. Riding at full speed, the cowboy swings the noose around his head in ever widening circles, and finally casts it at will over the head or hoof of the escaping steer. In the Southwest and Northwest many ranges belong to the United States government. Here the herds of several ranches mingle, and must be "rounded up" every spring to brand the calves, and every fall to separate from the herd those animals which are to be sold and slaughtered. Some range cattle are sent direct from the range to the slaughterhouse, where they are killed and the meat dressed for market. But most cattle are sold when they weigh 1,000 pounds to the farmers of the corn states,



Distribution of swine and sheep in the United States.

where they are fattened upon corn, cottonseed meal, and hay until they gain 300 pounds. It is more profitable for the farmers of Kansas, Nebraska, and nearby states to feed the corn than to sell it. From these sections the cattle are sent to the great meat-packing centers. The principal shipping points for sheep and cattle in the range country are Cheyenne, Wyoming; Denver, Colorado; San Antonio, and Fort Worth, Texas.

Horses and Mules. Horses are mostly used as draught animals. Horses differ in size and appearance. Some are tiny, like the Shetland pony used by children; others, used for drawing heavy loads, are large animals. Thoroughbred horses are bred for racing, and bring very large prices. The Bluegrass region of Kentucky and the hills of Vermont are noted for fine strains of horses. In Missouri, Kansas, and the southern states mules are numerous.

Sheep and Goats. The United States ranks third as a sheep-raising country. Australia is first and Argentina

second. These animals crop shorter grass than cattle, and are therefore profitable in semi-arid grasslands and in hilly and mountainous sections. They are kept in many states, but are most numerous in Montana, Wyoming, New Mexico, Idaho, Utah, and Ohio. Sheep are raised either for the wool or for the flesh.

In some sections goats are kept, usually in small numbers, but occasionally in large herds. The hair of Angora goats, called mohair, is woven into cloth, and the hides of all goats make valuable leather.

Swine. One of the most important farm animals is the hog, which is raised for its flesh, called pork. More than one third of the swine in the world are raised and slaughtered in the United States, mostly in the northern states of the Great Central Plain.

Poultry. Of domestic fowls, chickens are by far the most common. Large farms, called poultry farms, are

Sheep shearing.

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A squab farm.

devoted to raising chickens, turkeys, geese, ducks, guinea fowls, and pigeons. Many of the eggs are hatched in incubators. Care is taken to feed and rear fine poultry.

Ostriches. In southern California, Arizona, and Florida thousands of ostriches are raised for their plumes. The first birds were brought from Africa.

Questions

1. Which domestic animals are slaughtered for food?
2. What are dairy products? Which states lead in dairy products?
3. Which states lead in sheep raising?

Exercises

Make a list of animal products.

Name the kinds of meat sold by the butcher and tell which animal furnishes each kind.

CHAPTER X

MANUFACTURING

Manufacturing ranks next to farming in the United States. There are mills and factories in all parts of the country, but chiefly in the Northeast. New York and Philadelphia are our chief manufacturing cities.

Raw Materials. The products of the mine, quarry, forest, and farm are called raw materials, and are generally of little use until they have been manufactured (*manus* means hand; *facto* means make). Sometimes the manufactured product of one industry is the raw material for another. After iron ore has been smelted and cast into pigs, it is still the raw material, from which tools, hardware, and machinery are made. When logs are sawed and planed into boards, shingles, and other kinds of lumber, they are raw material for furniture and other wooden articles. Grain is ground into flour, which requires further manufacture by the baker to become bread. Cotton and wool are spun into threads and woven into cloth. This is the raw material from which dressmakers and tailors make garments. Hides, when tanned, become leather, from which shoes, harness, bags, and other articles are made.

Power. Most of our manufacturing plants are run by steam power which is generated from coal. Many factories, however, derive their power from waterfalls. In hilly country the water rushing down the steep beds of the streams with great force is directed against wheels, and, by turning them gives power to machinery in the mill or factory. At the Fall Line (pages 14, 15) many

important manufacturing centers have been built up. In the Blue Ridge, where cataracts and rapids afford fine water power, there are many manufacturing cities. Niagara Falls have been harnessed to machinery. Some of the water, instead of dashing freely over the Falls and adding to their splendor, is drawn off above the Falls, turned into channels blasted in the rock, which lead it to turbines that turn dynamos. From thence it flows down through tunnels to the Niagara River at the foot of the Falls. The electric current from the dynamos runs mills, electric cars, and furnishes light not only at the Falls, but in Buffalo, Lockport, Syracuse, and other cities.

Electricity, generated by water or steam power, is largely used in mills and factories. It can be conveyed over wires to a distance, whereas steam and water power must be used near the site where they are produced. The cost of manufacturing depends largely upon the kind of power used. Water power is cheap; on the other hand, when coal must be brought great distances, manufacturing is expensive; and higher prices must be charged for the same kind of goods that another manu-

Falls and mills,

facturer having cheaper power can make and sell for a lower price.

Labor. Manufacturing depends also upon the cost of labor. A mill requiring many employees is likely to be located in or near a large city. Other mills making the same goods will be built there because the working people understand that trade. Hence a city is often known on account of a particular industry, as Paterson, for making silk goods; St. Louis, for tobacco products and brewing; Trenton, New Jersey, for its potteries; and Troy, New York, for collars and cuffs. Often the desire to secure labor brings different industries to the same town. Since in the iron, coal, and lumber industries only men and boys are employed, girls and women of the laboring families can be hired to work in other industries. In Pennsylvania, where there are many iron mills, we find silk mills giving employment to girls and women. At Birmingham, Alabama, the greatest iron and steel section of the South, there are cotton mills employing women and children.

Nearness to Raw Materials. Unless other conditions pre-

Spokane, Washington.

vent, manufacturers build their factories near the raw materials. So, there are many cotton mills in the South. Cottonseed products also are manufactured in this section, particularly in Memphis, Montgomery, Vicksburg, and Natchez. Tobacco products are manufactured at Raleigh and Durham in North Carolina, at Louisville in Kentucky, at Clarksville in Tennessee, and at St. Louis. These cities are near the tobacco fields. At Key West and Tampa, Florida, which are near Cuba, there are tobacco factories that use Cuban tobacco. Rice mills, which remove the husks and polish the grains of rice, are located at New Orleans and Galveston. Grand Rapids, Michigan, is the leading city in the manufacture of furniture, very largely because of its nearness to the forests of the Great Lakes region. In the great forest regions of the United States, such as Washington and Louisiana, are many of the largest sawmills in our country. Minneapolis and Duluth, near the great wheat lands of the Red River of the North, are great centers of the milling industry.

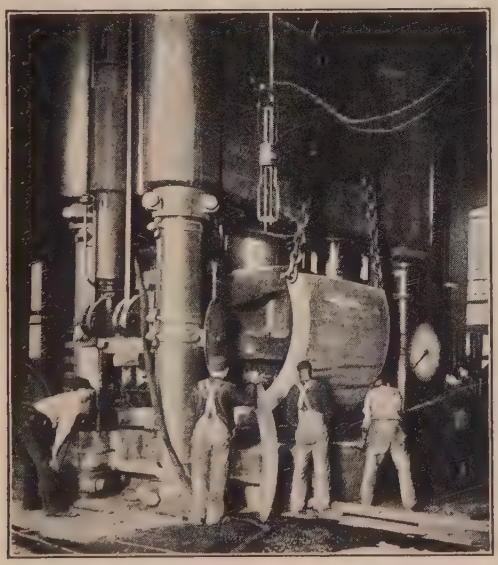
Nearness to Markets. Another important consideration for manufacturing is nearness to markets and shipping facilities. If goods are made near the people who buy them, the cost of delivery is low. Most of the agricultural implements are manufactured in the great farming sections of our country. Some of the largest factories for making implements are located at Chicago and Moline in Illinois, and at South Bend, Indiana.

Chief Manufacturing Section. The northeastern part of the United States possesses many advantages for manufacturing. It is the oldest and most densely settled part of our country, so there are many cities providing both laborers and consumers. It is the wealthiest part of the country and demands most luxuries. It has fine water power and it is near the Appalachian coal fields.

It is near the Atlantic coast, where safe and spacious harbors permit the importation of raw materials and the shipment of our manufactures to Europe, the most highly civilized of all the continents, and therefore the best market in the world.

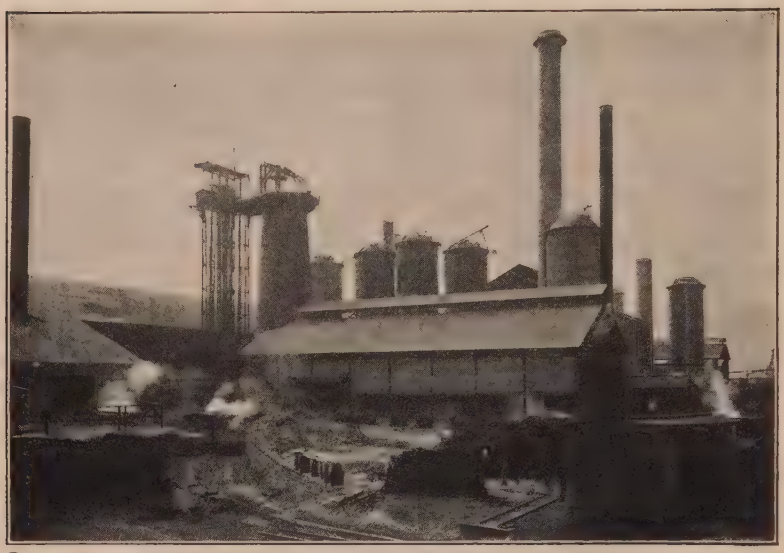
Iron and Steel. The leading manufacturing industry of our country is the production of iron and steel and making it into rails, armor plate, machinery, hardware and other iron and steel products.

Pittsburgh, Pennsylvania, is the chief iron and steel center in the United States, and Chicago ranks next.



Bending armor plate in a steel mill.

Toledo, Cleveland, Gary, and Buffalo, situated upon the Great Lakes, are other leading centers of this industry. In the South, Birmingham, Alabama, is the chief iron and steel city; Chattanooga, Knoxville, and Atlanta are other centers. The iron ore for the blast furnaces of Pittsburgh and the cities on or near the Great Lakes



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A steel mill.

is shipped by water from the rich iron mines near Lake Superior, in Minnesota, Wisconsin, and Michigan. Birmingham owes its importance as an iron center to the deposits of iron ore, coal, and limestone that lie near the city.

Meat Packing. Next in importance to the iron and steel industry is meat packing. Chicago, Kansas City, Omaha, St. Louis, St. Joseph, Cincinnati, and Indianapolis are leading centers of this industry. These cities have immense stock yards connected with the railroads. The live stock are driven from the cars into the slaughterhouses, where skillful butchers, with the help of marvelous machines, slaughter an animal in a short time and dress its meat for market. Every part of the animal is used. The hides are made into leather; the bones are carved into buttons and handles, or are burned to make bone black, used in refining sugar. The horns are made into combs; the bristles into brushes; and the hoofs are

made into glue. The fat is converted into lard or tallow and into oleomargarine. Some of the fat is used in the manufacture of soap; and from the blood and other wastes fertilizers are made. In packing-houses that prepare products for interstate or export trade, the United States government inspects the animals before

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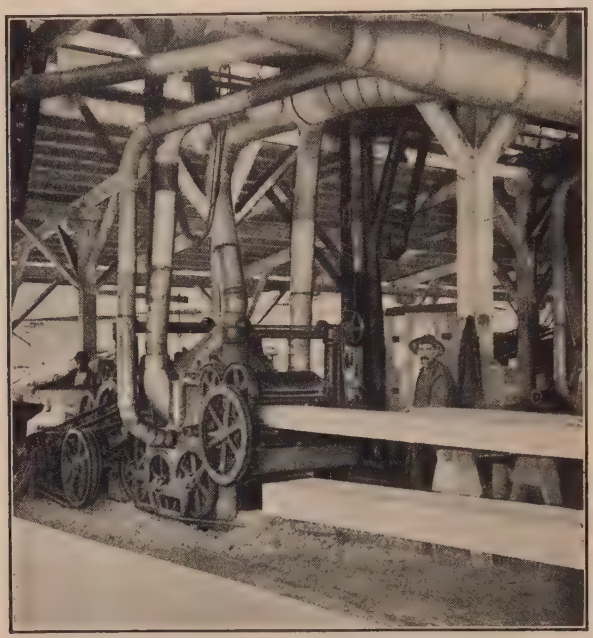
Meat packing.

they are slaughtered, and the meat after the slaughtering. This is done to prevent the meat of diseased animals being used for food.

Wood Products. The manufacture of lumber ranks third among our manufacturing industries. Large quantities of sawed timber are used for building materials, furniture, implements, railroad ties, and numerous other products. Wood pulp, turpentine and pitch, also are

important forest products. Most of the great sawmills are near the forest regions. Some of the chief furniture-making cities, in addition to Grand Rapids, are Chicago, Indianapolis, Detroit, Nashville, and Vicksburg.



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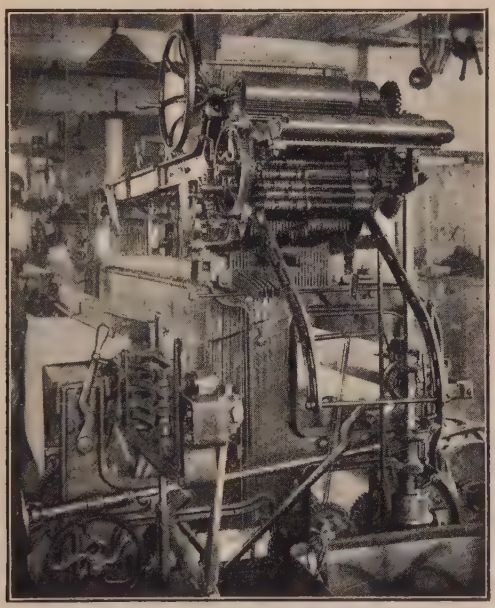
A planing mill. The pipes carry off the sawdust and shavings.

Flour Milling. The manufacture of flour is a leading industry. Minneapolis is the greatest flour-milling city in the world. The grain elevators, which store millions of bushels of wheat, enable the mills to grind the wheat all the year. Buffalo, Milwaukee, and Chicago are other cities that manufacture large quantities of flour.

The Textile Industries. Cotton manufacture is the most important textile industry of our country. Next in importance is the manufacture of wool. The amount of cotton goods so far outranks the other fabrics that, although cotton is much cheaper than wool, the total

value of our cotton manufactures is greater than that of our manufactures of wool.

In all the textile industries the fiber of the cotton, wool, silk, or other material is spun into thread or yarn. This is woven into cloth. Textiles differ in texture or thickness from veils to carpets. They are alike in having threads running along the length of the fabric called the



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Modern loom in a woolen mill.

web, which are filled in by interwoven threads running crosswise called the woof.

Massachusetts is the chief state in the manufacture of cotton goods. Fall River, Lowell, and New Bedford are leading centers of this industry in Massachusetts. Manchester, New Hampshire, and Philadelphia and Chester in Pennsylvania are other textile centers. North Carolina and South Carolina are the most important cotton-manufacturing states of the South. Lawrence,

Philadelphia, and Providence are leading cities of the woolen industry.

Clay and Glass. The manufacture of clay into bricks, tile, and pottery is an extensive industry. Ohio leads all the other states in the production of clay products. The Hudson valley is the greatest brick-making district in the world. Trenton, New Jersey; East Liverpool and Cincinnati, Ohio; and Wheeling, West Virginia, are great centers of pottery manufacture. The manufacture

Making plate glass.

of glass from sand is closely connected with the natural gas regions, which furnish, at low cost, fuel for producing the intense heat needed in this industry. Glass is made at Pittsburgh, Wheeling, Toledo, and in Muncie and Anderson, Indiana.

Other Manufacturing Industries. Ships are built at Philadelphia, and at Camden, on the opposite bank of the Delaware River. There are large shipyards at Oakland, California; Seattle, Washington; Newport News, Vir-

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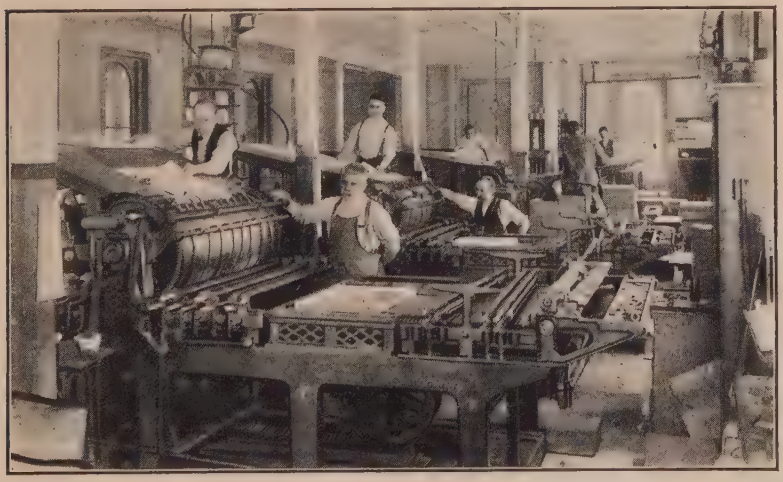
Building a battleship.

ginia; and at Cleveland, Ohio. Locomotives, cars, and electric motors are built at Schenectady, New York; Pittsburgh and Philadelphia, Pennsylvania; Wilmington, Delaware; and St. Louis, Missouri. Detroit is the chief city for the manufacture of automobiles. Printing and



Printing presses.

publishing are important industries in many of the largest cities, New York ranking first. Large numbers of boots and shoes are manufactured in Lynn, Brockton, and Haverhill, Massachusetts; and in St. Louis, Missouri. New York is the chief city in the manufacture of clothing and in sugar refining.

Questions

1. Where is the chief manufacturing section of the United States?
2. What are some of the conditions that determine the cost of manufacturing?
3. What are the chief sources of power in manufacturing?
4. Which cities are great centers of iron and steel manufacture?
5. What are the three leading manufacturing industries of the United States?

Exercises

Name the raw material or materials used in the manufacture of each of the following products:—iron, flour, lumber, bricks, textiles, locomotives, and automobiles.

Trace the process by which some article of clothing or furniture is turned from raw material into a manufactured product.

CHAPTER XI

COMMERCE

Manufacturers and farmers do not as a rule sell their products directly to the consumer. There are millions of business men, called merchants, who do not produce their wares but merely buy and sell them. Products must be shipped from the producers to the consumers, and millions of men are engaged in transportation. The work of buying and selling goods and transporting them from one place to another is called trade or commerce.

Foreign Commerce. The exchange of goods between foreign countries is called foreign commerce. Goods that enter a country are called imports. Goods sent out from a country are called exports. The flour that we ship to England is an export of our country; but to England it is an import. Each nation inspects the imports from other countries; and most countries levy duties upon many kinds of incoming goods. Such a duty is called a tariff. A customhouse is a large building in which is carried on much of the work of government supervision of foreign commerce. Each city at which imports may enter is called a port of entry. Such a city has a customhouse.

Exports of the United States. The chief exports of the United States are cotton, iron and steel goods, meats, wheat and flour, copper and its manufactures, and petroleum. These six classes of exports constitute about two thirds of the total exports of our country. Cotton is our most valuable export, amounting to about one fourth of the total value of goods shipped to foreign countries.

MAP OF THE

WORLD

SHOWING

COLONIAL POSSESSIONS, PRINCIPAL COMMERCIAL ROUTES AND TELEGRAPH LINES

SCALE OF GEOGRAPHICAL MILES

On the Equator

0 500 1000 1500 2000

On the 30th Parallel

0 500 1000 1500 2000

On the 60th Parallel

0 500 1000 1500 2000

COLONIAL POSSESSIONS

- Great Britain
- France
- Germany
- Portugal
- Spain
- Netherlands
- Italy
- Denmark
- Belgium
- United States

COMMUNICATIONS

Principal steamship routes. The heavier blue lines show the most important ocean routes

Figures indicate the distance in geographical miles between places marked thus, ⊕

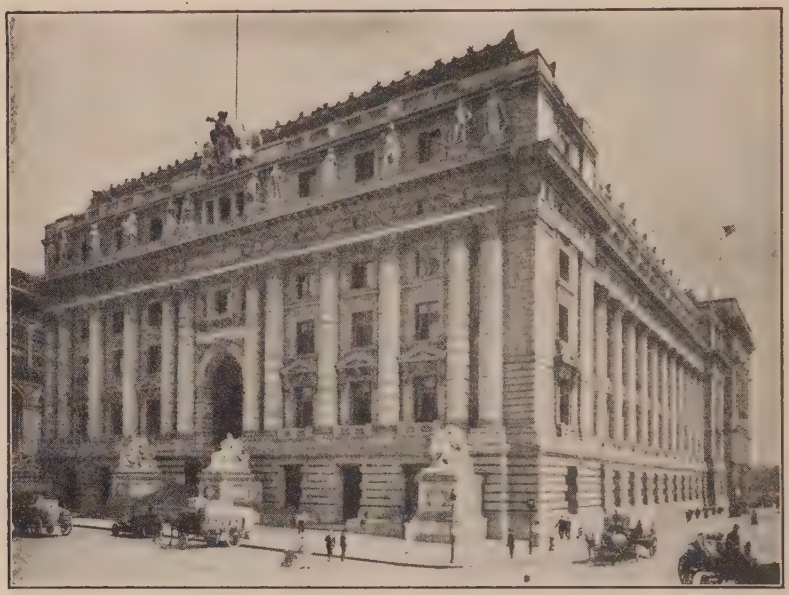
Submarine telegraph cables.

——— Principal railroads.

..... Caravan routes.

Corn is our chief crop, but almost none is exported. Most of it is fed to hogs and cattle; and the meat of these animals is one of our most important exports. Great Britain is by far the largest buyer of our exports. Germany and Canada rank next.

Imports of the United States. The leading imports of the United States are coffee, sugar, rubber, hides and skins, chemicals and drugs, and raw silk. Most of the coffee



Customhouse, New York.

comes from Brazil, and this country also furnishes us more rubber than any other rubber-producing country. Cuba is the largest exporter of sugar to our country. Much of our sugar comes from Hawaii, but this sugar is not an item of foreign trade, for Hawaii belongs to the United States. Many hides come from Argentina, Canada, and Mexico. We buy more chemicals and drugs from Germany than from any other country. Nearly all of our raw silk comes from Japan, China, and Italy.

Domestic Commerce. The exchange of goods between parts of the same country is called domestic commerce. In the United States, grains are shipped from the great farming states of the Middle West to all sections that do not grow enough of these food products for local use. Live stock from the stock-raising regions are sent to the great meat-packing centers. From the coal fields of the United States, coal is shipped throughout the country for manufacturing and heating purposes. Lumber from the great forest regions forms a considerable part of the freight carried on our railroad and waterways.

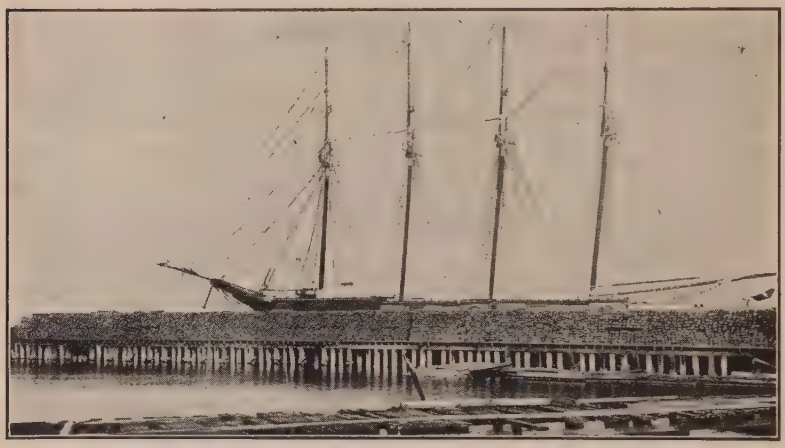
Dressed meats, iron and steel goods, furniture, machinery, and other manufactures are transported from the great manufacturing centers to all parts of this country. Tropical fruits, such as oranges and lemons, are shipped from California and Florida to all the other states. Milk trains run daily into the large cities from dairying districts, in some cases two or three hundreds of miles distant.

Questions

1. What is commerce? What is the difference between foreign commerce and domestic commerce?
2. What is the difference between exports and imports?
3. What is a port of entry?
4. What are the leading imports of the United States? What countries are large producers of these imports?
5. What are the principal exports of the United States? Which country is the largest buyer of our products? What other countries are important buyers of our exports?

Coastwise Trade. A considerable part of our domestic trade is carried on by means of ships that sail from port to port along the coasts of the United States. The *Clyde, Mallory, Old Dominion, Merchants and Miners Trans-*

portation, Southern Pacific, and the *New England Steamship* are some of the steamship lines operating on the Atlantic coast of the United States. American ports on the Pacific are connected by several coastwise lines of steamers. Nearly all of the trade between Alaska and the main body of the United States is carried on by ships plying between Alaskan ports and those on Puget Sound. All coastwise vessels must be owned by Americans and must fly the American flag.



Fourmaster schooner loading lumber, Jacksonville, Florida.

Ocean Steamship Lines. From the leading American ports on the Atlantic and Pacific coasts, steamships sail to all parts of the world. Most of our foreign commerce, however, is between Europe and the Atlantic ports of the United States. Some of the Transatlantic steamship lines are the *Cunard, White Star, American, Red Star, Hamburg-American, North German Lloyd,* and the *French Line.* A number of lines connect the United States with the West Indies, Mexico, Central America, and South America. Some of these are the *United Fruit Company, Lamport and Holt, Munson, Red "D", Peninsular and Occidental (P. & O.),* and *Ward* lines.

Several steamship lines connect the western ports of the United States with Asia and the islands lying in the Pacific. Among these are the *American-Hawaiian, Blue Funnel, Hong Kong-America, Oriental,* and *Pacific Mail.* The ships of the *Union Steamship Company* connect the western coast of our country with New Zealand and Australia.

Transportation on the Great Lakes. The Great Lakes are the most important inland waterway in the world; and an enormous bulk of freight is carried on the lake steamships. From Duluth and other ports on Lake Superior, iron ore is shipped to ports on Lake Michigan and Lake Erie. Wheat from Minnesota and the Dakotas is carried eastward from Duluth. Large cargoes of lumber are also shipped eastward on the Great Lakes. Westward, from ports on Lake Erie, the lake steamers carry large cargoes of coal and machinery. The leading American ports on the Great Lakes are Duluth, Superior,

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Ore docks, Duluth, Minnesota.

Milwaukee, Chicago, Detroit, Toledo, Cleveland, Erie, and Buffalo.

Navigable Rivers. Many of the rivers of the United States are highways of commerce. Transportation by river is cheap, and heavy, bulky cargoes such as coal, lumber, bricks and cotton are shipped by steamboats and barges.

The Hudson is the main important waterway of the

Freight boats on Lake Superior.

rivers flowing into the Atlantic from the United States. This stream is navigable to Troy, a distance of 150 miles from the sea. The finest river steamers in the United States are those that ply between New York and Albany on the Hudson. The Penobscot, Kennebec and Connecticut are the most important navigable rivers in New England. The rivers of the Atlantic coast plain are navigable to the Fall Line.

The Mississippi is the chief navigable river of the United States. Large steamers reach St. Louis and smaller boats go to St. Paul. The Ohio is the most

A raft of logs on Mississippi above Minneapolis.

important tributary of the Mississippi. Thousands of barges of coal go down stream to the cities along the lower Mississippi.

The Columbia is the most important of the navigable streams of the Pacific coast. Portland, on the Willamette, a tributary of the Columbia, is reached by ocean steamers. River steamers go hundreds of miles far inland on the Columbia and its branches.

Canals. The "Soo" Canal between Lake Superior and Lake Huron, the Erie Canal connecting Lake Erie and the Hudson River, and the Chicago Drainage Canal which extends from Lake Michigan to the Desplaines River, are the most important canals in the United States. Another canal of importance is the Chesapeake and Delaware Canal which extends across the narrow strip of land between the Delaware and Chesapeake bays. The Cape Cod Canal, a recently completed waterway, cuts across the neck of Cape Cod.

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Erie Canal.

In the early days of our country before railroads were built, many canals were dug and put in operation. Most of these have been abandoned.

Questions

1. What are the chief ports on the Atlantic Coast of the United States? The Gulf Coast? The Pacific Coast? The Great Lakes?
2. What are the chief river ports on the Mississippi River? On the tributaries of the Mississippi?
3. What are the most important canals in the United States? What waters does each connect?
4. At what possessions of the United States do vessels stop in crossing the Pacific Ocean between Asia and the United States? How does the length of the voyage across the Pacific compare with that across the Atlantic?

Railroads of the United States. No other country has as many railroads as the United States. These railroads make it possible to ship quickly and at low cost the products of any section to other sections. Not only do rail-

roads carry freight, but also passengers, express matter, and mail matter.

Railroads of New England. The *New York, New Haven and Hartford Railroad* connects New York and Boston. The *Boston and Albany,* the *Boston and Maine,* and the *Central Vermont* are other railroads of New England. The *Grand Trunk,* a great transcontinental railway of Canada, extends to Portland in Maine, which serves as a winter terminus of this Canadian railway.

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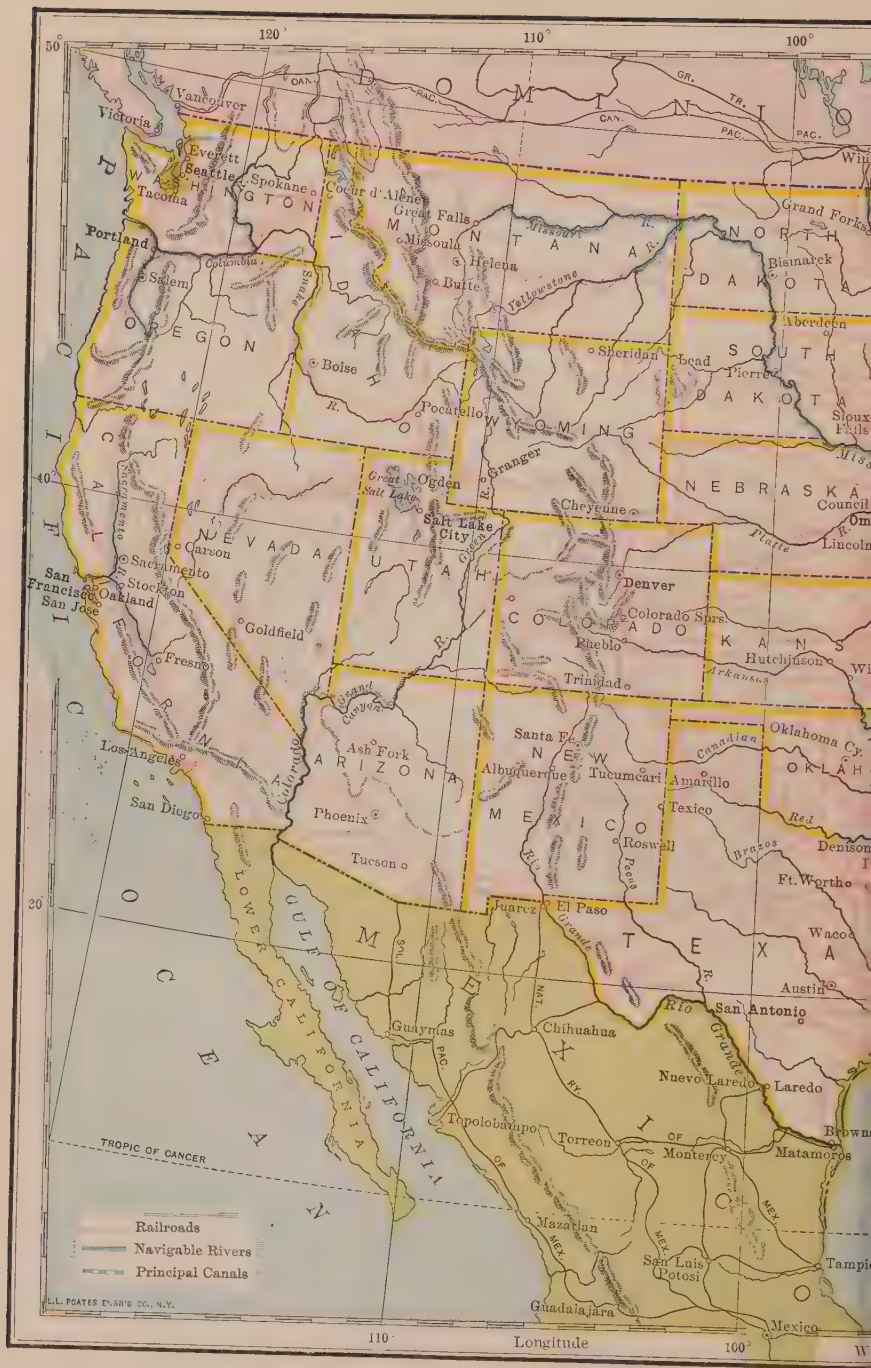
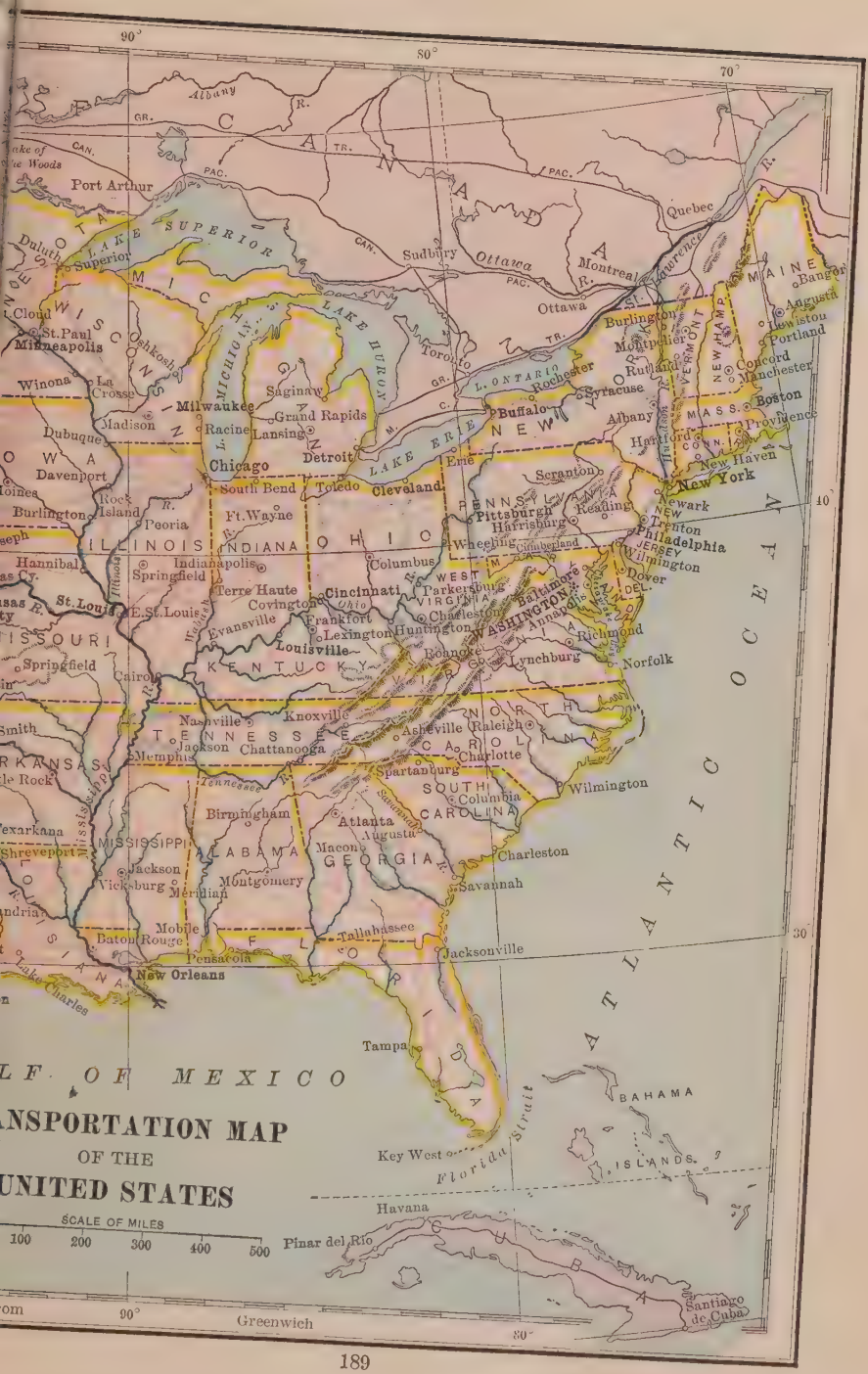
Railroad traffic, Chicago.

Eastern Railroads from the Great Lakes and Ohio Valley. The territory lying west of the middle section of the Atlantic coast and extending to the Mississippi has a number of important railroad systems. The western part of this area, lying between the Great Lakes and the Ohio River, is level and railroads can be built at low cost. These railroads cross the Appalachian Highland in river valleys that form passes through the mountain belt. The *New York Central* is one of the great systems of rail-


120°
110°
100°
50°
40°
30°
Vancouver
Victoria
Everett
Seattle
Tacoma
Spokane
Coeur d'Alene
Great Falls
Missoula
Helena
Butte
Portland
Salem
Boise
Pocatello
Sheridan
Bismarck
Grand Forks
Aberdeen
Pierre
Sioux Falls
Ogden
Great Salt Lake
Salt Lake City
Cheyenne
Lincoln
Carson
Sacramento
Stockton
San Francisco
Oakland
San Jose
Goldfield
Fresno
Denver
Colorado Spgs.
Pueblo
Trinidad
Hutchinson
Oklahoma Cy.
Los Angeles
San Diego
Ash Fork
Phoenix
Tucson
Albuquerque
Tucumcari
Amarillo
Texico
Roswell
Ft. Worth
Waco
Austin
San Antonio
Juarez
El Paso
Chihuahua
Guaymas
Nuevo Laredo
Laredo
Torreon
Monterey
Matamoros
Mazatlan
San Luis Potosi
Guadalajara
Mexico
Tampico
Railroads
Navigable Rivers
Principal Canals
TROPIC OF CANCER
Longitude


NSPORTATION MAP
OF THE
UNITED STATES
SCALE OF MILES
100 200 300 400 500
Greenwich
Port Arthur
Duluth
Superior
St. Paul
Minneapolis
Winona
La Crosse
Madison
Milwaukee
Dubuque
Racine
Chicago
Davenport
Rock Island
Burlington
Peoria
Hannibal
Springfield
Indianapolis
St. Louis
E. St. Louis
Terre Haute
Cincinnati
Covington
Evansville
Frankfort
Lexington
Louisville
Springfield
Cairo
Nashville
Knoxville
Memphis
Jackson
Chattanooga
Birmingham
Atlanta
Augusta
Macon
Vicksburg
Montgomery
Meridian
Mobile
Baton Rouge
Pensacola
Tallahassee
Jacksonville
New Orleans
Lake Charles
Tampa
Key West
Havana
Pinar del Rio
Santiago de Cuba
Saginaw
Grand Rapids
Lansing
Detroit
Toledo
South Bend
Ft. Wayne
Cleveland
Columbus
Toronto
Buffalo
Rochester
Syracuse
Albany
Erie
Scranton
Pittsburgh
Harrisburg
Reading
Wheeling
Parkersburg
Charleston
Huntington
Roanoke
Lynchburg
Richmond
Norfolk
Asheville
Raleigh
Charlotte
Spartanburg
Columbia
Wilmington
Sudbury
Ottawa
Montreal
Quebec
Burlington
Montpelier
Rutland
Concord
Manchester
Boston
Providence
Hartford
New Haven
New York
Newark
Trenton
Philadelphia
Wilmington
Dover
Baltimore
Annapolis
Washington
Bangor
Augusta
Lewiston
Portland
Ottawa
Sudbury
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
St. Lawrence R.
Mississippi R.
Ohio R.
Tennessee R.
Potomac R.
Florida Straits
Gulf of Mexico
Atlantic Ocean
Bahama Islands
Canada
Cuba
Maine
Vermont
New Hampshire
Mass.
Conn.
Del.
Md.
Virginia
West Virginia
Pennsylvania
New Jersey
Ohio
Indiana
Illinois
Wisconsin
Michigan
Minnesota
Iowa
Missouri
Kentucky
Tennessee
Mississippi
Alabama
Georgia
South Carolina
North Carolina
Florida
Arkansas
Louisiana
Texas
90°
80°
70°
40°
30°

The Mohawk Valley. The Mohawk River, the Erie Canal, the four tracks of the New York Central, and a highway are shown in this picture.

roads of this territory. From the city of New York the *New York Central* follows the Hudson-Mohawk Valley, then continues westward to Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, and other points north of the Ohio. The *New York Central and Hudson River,* the *West Shore, Lake Shore and Michigan Southern, Michigan Central,* and *Big Four* are the most important railroads of this system. The *Pennsylvania Railroad System* crosses from the Atlantic coast to the Great Lakes and the Ohio Valley by way of Pennsylvania. By this system the cities of New York, Philadelphia, Washington, and Baltimore are connected with Pittsburgh, Chicago, Cincinnati and St. Louis. The *Lehigh Valley, Lackawanna,* and *Erie* railroads connect New York with Buffalo. The *Baltimore and Ohio System* extends from New York, Philadelphia, Baltimore, and Washington to Pittsburgh, Chicago, Cincinnati, and St. Louis. This system crosses the states of Maryland and West Virginia, passing through the Appalachians by way of the Potomac

Valley. The *Chesapeake and Ohio Lines* extend from Washington, Norfolk, Newport News, and Richmond to Cincinnati, Louisville, Toledo, and Chicago. This system follows the valleys of the James and Kanawha rivers across the Appalachian Mountains. The *Norfolk and Western Railway* connects Norfolk with Cincinnati and

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Pennsylvania Railroad near Altoona, Pennsylvania.

other cities in the Ohio Valley. It reaches the Ohio by way of the valleys of the James and Big Sandy rivers.

Southern Railroads. The territory lying mainly south of the Ohio and James rivers is traversed by three great systems that connect the cities along the Atlantic seaboard and also bring the Gulf coast and interior sections in touch with the ports of the South Atlantic coast. The *Atlantic Coast Line* follows the Atlantic Coast Plain, connecting Washington, Richmond, Savannah, Mont-

gomery, Jacksonville, Tampa, and other southern points. The *Seaboard Air Line* runs southward from Richmond and Norfolk through Raleigh and Savannah, Jacksonville, and Tampa; and westward from Atlantic points to Montgomery, Atlanta, and Birmingham.

The *Southern Railway* is a great system spreading its network of iron over the country south of the Ohio and east of the Mississippi. From Washington and Norfolk it extends southwestward to Charleston, Savannah, Jacksonville, Chattanooga, Birmingham, Atlanta, Memphis, and Mobile. North and south lines of the system connect Cincinnati and St. Louis with the cities to the south.

North-South Railroads Leading to the Gulf. Several railroad systems running in a general north and south direction connect the states of the Mississippi Valley and furnish an outlet to the Gulf of Mexico. East of the Mississippi are the *Queen and Crescent Route,* the *Louisville and Nashville Railroad,* and the *Mobile and Ohio Rail-*

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Railroad bridges across the Ohio at Cincinnati.

road. The *Queen and Crescent* connects Cincinnati and Chattanooga with Mobile and New Orleans. The *Louisville and Nashville* connects Cincinnati, Louisville, and St. Louis with Nashville, Atlanta, Birmingham, Montgomery, Pensacola, and New Orleans. By connection with the *Chicago and Eastern Illinois Railroad,* this railroad forms a continuous route from the Great Lakes to the Gulf. The *Mobile and Ohio* connects St. Louis with Birmingham, Montgomery, Mobile, and New Orleans.

The territory lying between the Missouri River and the Gulf is covered by the railroads of several systems. The *Missouri Pacific Railway* is an extensive system, whose railroads connect Omaha, Kansas City, and St. Louis with New Orleans and Galveston. The *Missouri, Kansas, and Texas Railway* extends southward to the Gulf from Kansas City to Galveston. The *Frisco Lines* run from St. Louis and Kansas City to Galveston, New Orleans, and other Gulf ports. The *St. Louis Southwestern Railway Lines (Cotton Belt Route)* connect St. Louis and Cairo with many cities in Arkansas, Louisiana, and Texas.

Railroads to the Pacific Coast. From the Mississippi Valley several railroads extend westward to the Pacific coast. These lines are the so-called "transcontinental" railroads of the United States. In the northern belt are the *Northern Pacific Railway, Great Northern Railway,* and the *Chicago, Milwaukee, and St. Paul Railway.* The first two railways connect Duluth and St. Paul and Minneapolis with Seattle and other ports on Puget Sound and with Portland. The *Chicago, Milwaukee, and St. Paul* system covers the territory between the Great Lakes and the Missouri River with a network of railroads connecting Chicago, Milwaukee, Duluth, St. Paul, and Minneapolis, Kansas City, and Omaha. West of the

Missouri a line of this system extends to the ports on Puget Sound.

In the middle belt of the area west of the Mississippi are the *Union Pacific*, the *Denver and Rio Grande*, and the *Western Pacific*. The *Union Pacific* is a group of railroads extending from Omaha and Kansas City to Denver, Portland, and Seattle. The *Denver and Rio Grande Railroad* extends from Denver to Salt Lake City. The *Western Pacific* extends from Salt Lake City to San Francisco. A railroad of the *Missouri Pacific* system, running from St. Louis, connects with the *Denver and Rio Grande*. This road and the *Denver and Rio Grande* and the *Western Pacific* constitute a continuous route from the Mississippi River to the Pacific.

The *Santa Fe Railway System* extends westward from Chicago and Kansas City to Los Angeles and San Francisco. The *Southern Pacific System* runs from New Orleans and Galveston through El Paso to Los Angeles and San Francisco. From San Francisco a railroad of this system runs northward to Portland and the ports

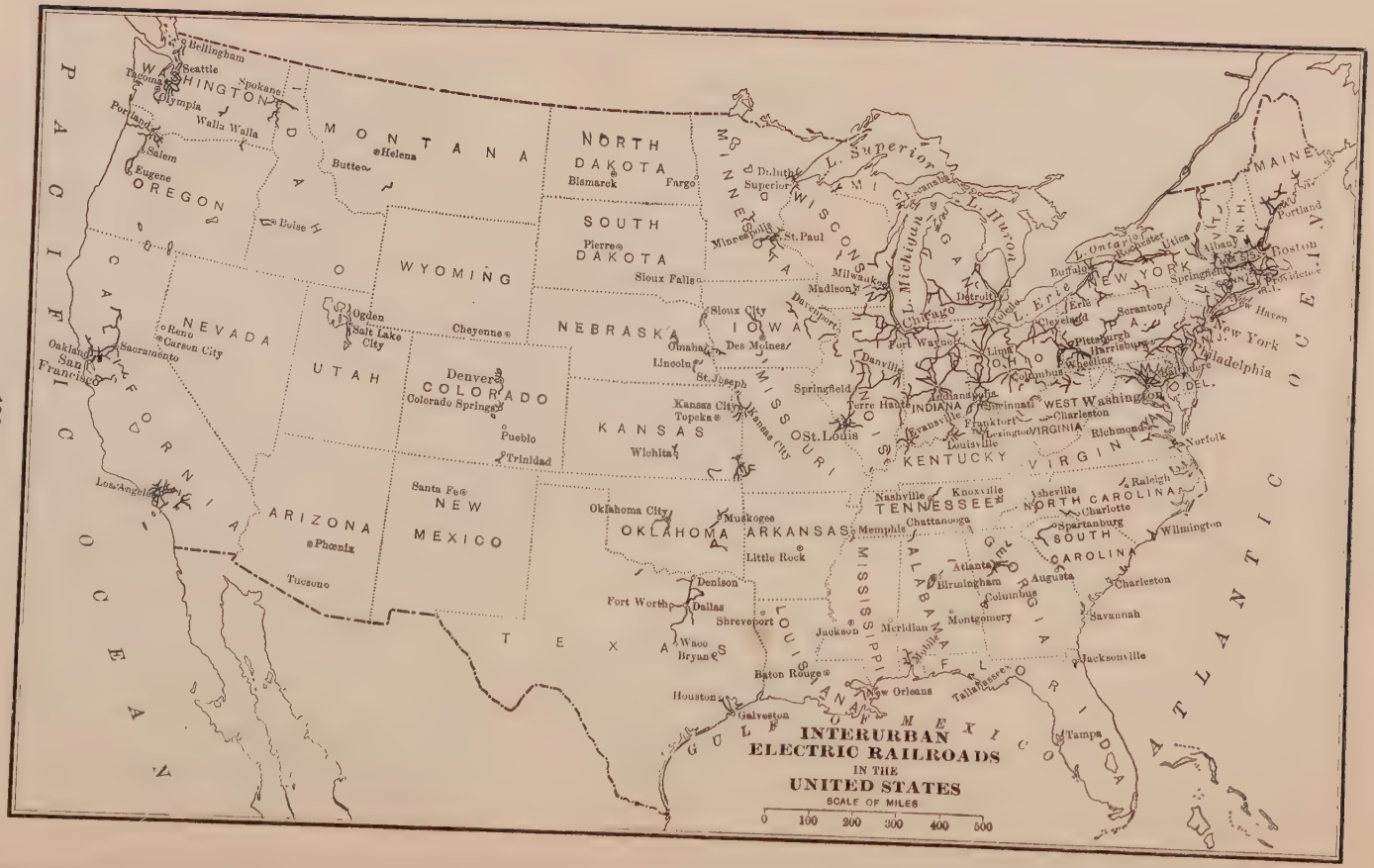
A rotary snowplow, Colorado.

on Puget Sound. Another line of the same system runs eastward from San Francisco to Salt Lake City. Steamships of the *Southern Pacific* connect New York with New Orleans and Galveston, thus making a continuous route from New York to the Pacific coast.

Standard Time. All parts of the world do not have the same time. When it is daylight in the United States it is night in China on the opposite side of the earth. All places on the same meridian, however, have the same time. Since the sun appears to move across the sky from east to west, the farther east a place is, the sooner it

has sunrise. It takes the sun one hour to pass over 15° of longitude. Therefore two places 15° apart will have a difference of one hour in time. In west longitude when it is 12 o'clock by sun time along the meridian of 90°, it is 1 o'clock along the meridian of 75°, 11 o'clock along the meridian of 105°, and 10 o'clock along the meridian of 120°.

If the watches of trainmen in different places had sun time there would be endless confusion in the operation of eastbound and westbound trains. For convenience


INTERURBAN
ELECTRIC RAILROADS
IN THE
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
Bellingham
Seattle
Tacoma
Olympia
Spokane
Walla Walla
Portland
Salem
Eugene
Helena
Butte
Boise
Bismarck
Fargo
Duluth
Superior
Minneapolis
St. Paul
Pierre
Sioux Falls
Milwaukee
Madison
Chicago
Detroit
Cleveland
Buffalo
Rochester
Utica
Albany
Boston
Providence
Portland
Ogden
Salt Lake City
Cheyenne
Reno
Carson City
Sacramento
Oakland
San Francisco
Los Angeles
Denver
Colorado Springs
Pueblo
Trinidad
Santa Fe
Phoenix
Tucson
Omaha
Lincoln
Des Moines
Sioux City
Kansas City
Topeka
Wichita
St. Joseph
Springfield
St. Louis
Terre Haute
Indianapolis
Evansville
Louisville
Cincinnati
Columbus
Toledo
Erie
Scranton
Pittsburgh
Harrisburg
Wheeling
Philadelphia
New York
Washington
Richmond
Norfolk
Lexington
Frankfort
Charleston
Nashville
Knoxville
Memphis
Chattanooga
Raleigh
Charlotte
Wilmington
Spartanburg
Atlanta
Augusta
Charleston
Birmingham
Montgomery
Savannah
Jacksonville
Tallahassee
Mobile
New Orleans
Meridian
Jackson
Vicksburg
Baton Rouge
Houston
Galveston
Dallas
Fort Worth
Denison
Shreveport
Waco
Bryan
Oklahoma City
Muskogee
Little Rock
Tampa

and safety in railroad travel the United States, like most civilized countries, is divided into four standard time belts. In each belt all clocks and watches have the same time. Each time belt has the local sun time of a meridian near the middle of the belt. Thus Eastern time is the local time of 75°, west longitude, Central time of 90°, Mountain time of 105°, and Pacific time of 120°.

Each railroad changes from the standard time of one belt to that of another at some convenient point. The Pennsylvania Railroad running from New York to Chicago changes from eastern time to central time at Pittsburgh; the New York Central lines change from eastern to central time at Buffalo; and the Southern Railway makes the same changes at Atlanta. The lines bounding the time belts are, therefore, not straight north and south lines.

Electric Railroads. The electric roads of the United States afford rapid transit in city streets and between neighboring towns and villages. Electric cars enable farmers and the people of small villages to trade with large cities. They have thus helped to make country life less lonesome. They often connect towns with pleasure resorts. By changing from one car to another it is possible to travel from Portland, Maine, to Boston, New York, Philadelphia, and with but brief interruption to Chicago. The fare is usually lower than on railroads.

Questions

1. Which are the chief railroads of the Atlantic Coast Plain? Which cities does each serve?
2. Which railroad systems connect New York with Chicago? Where does each of these roads cross the Appalachian Mountains?
3. Which railroads connect the Mississippi Valley with the Gulf Coast?
4. Where are the "transcontinental" railroads of

the United States? Which are the north transcontinental railroads? The southern group? The middle group?

5. At which cities do most of the railroads cross the Mississippi River? What important railroad center is on the Missouri River? On the Ohio River?

6. How does the cost of building railroads on the Great Central Plain compare with that of building them across the Rocky Mountains? Why?

7. When it is noon in the Eastern time belt, what time is it in each of the other standard time belts?

8. When it is 6 A. M. in the Pacific time belt, what time is it in each of the other belts?

9. A train from New York enters Pittsburgh at 10 A. M., Eastern time, and after a stop of 10 minutes starts for St. Louis. According to Ceneral time, when does it start westward from Pittsburgh?

Exercises

Trace a railroad journey from New York to San Francisco. Obtain time tables of the railroads over which you would travel, and views of the cities you would like to visit en route. Calculate the time the journey would take and how much it would cost.

Sketch a map of the United States. Show the standard time belts and mark the location of one or more cities in each belt. Mark also the location of two or three cities on the lines separating time belts.

Roads and Streets. Throughout the United States the principal wagon roads are kept in excellent condition. They are built of stone, gravel, or other road material. They are often coated with oil or tar to keep down the dust. Among those who demand good roads are the farmers who drive their produce to towns or railroads, laborers who work in town and live in the country, and the owners of automobiles who travel long distances for business or pleasure.

In the cities, streets are paved with asphalt, stone blocks, bricks, wooden blocks, or other material.

A country road.

Communication. Commerce cannot thrive without means of sending messages. By mail, telegraph, telephone, cable and wireless telegraph it is possible for men thousands of miles apart to transact business.

Postal Service. The government of the United States has charge of the post offices. Letters and post cards are sent by mail. Packages are sent by parcel post. In cities mail matter is collected and delivered by letter carriers. Many parts of the country have free delivery of mail. People pay for mail service by buying stamps which they stick to letters or packages. Quick delivery can be had by putting on a special delivery stamp. Money can be sent by money orders. Letters to most foreign countries require five cents postage. To Great Britain, Canada, Mexico, and a few other countries the postage on letters is two cents.

Telegraphs and Telephones. Telegraph and telephone wires, thousands of miles long reach to almost every part of the United States. They are strung on tall

A mail car.

wooden poles or iron frames along the railroads. In the larger cities the wires are placed under ground. About one tenth of the families in the United States have telephones. The rate for long distance telephone service depends on the distance and the time the conversation lasts. The charge for telegrams depends on the distance and the number of words in the message. Longer messages can be sent at night by both methods for the price of day service because at night there is less business. Cables have been laid along the ocean bottom to Europe and the other continents, and thus messages may be cabled to the most distant lands. Along the coasts and at important inland points are wireless telegraph stations. They send messages to ships at sea and even across the Atlantic Ocean.

Questions

1. Which part of the United States has most electric railroads? Why?
2. What advantages has the mails over the telegraph? The telephone over the telegraph?

3. What are some of the advantages of good roads?
4. What is the cost of sending a letter to England? To France? To Mexico?

Exercises

Find out the cost of sending a telegram of ten words from your home to each of several large cities of the United States.

Obtain a map showing parcel-post zones of the United States. Find out the cost of sending a five-pound parcel to each zone.

CHAPTER XII

OUTLYING POSSESSIONS

The high rank of the United States among nations is due not only to the extensive area and large population of the United States and to its industrial, commercial, and educational leadership among nations; but also to the widespread distribution of our possessions which make the American flag known in distant quarters of the globe.

Outlying Possessions of the United States. The Philippine Islands, our chief possession in the Eastern Hemisphere, are near the southeastern coast of Asia. They give the United States a great advantage in its competition with rival countries for business in the Orient. Their great distance from the main body of the United States, however, makes their defence in case of war a serious problem. Other possessions of the United States in the Pacific are the Hawaiian Islands, Guam, and several of the Samoan group. On the mainland of North America two of our possessions are separated from the main body of the United States. Canada lies between the United States proper and Alaska, our largest territory. Far to the south, beyond Mexico, in Central America, we control the Panama Canal Zone, a narrow strip of land along both sides of the Panama Canal. This narrow waterway has made Uncle Sam the gate keeper of commerce in the New World. The merchant navies of every maritime power will file through the Canal, preferring this short cut between the Atlantic and Pacific Oceans to the long and dangerous voyage around Cape Horn.

Porto Rico, an island of the West Indies, is another possession of the United States.

Alaska. Alaska is by far our largest territory. The United States bought Alaska from Russia in 1867 for $7,200,000. The mines of gold, silver, and copper, the salmon and seal fisheries, have repaid this purchase price many fold.

Most of Alaska consists of mountain ranges and plateaus. These highlands are the northern end of the Cordilleran Highland of North America. Mount McKinley, the highest mountain in North America, is in Alaska. The Yukon is the principal river.

© Detroit Photographic Co.

Fur seals, Alaska.

Most of the people are white men who have gone to Alaska to seek their fortunes. The rest are almost entirely Indians. About half of the Indian population are Eskimo tribes, most of whom live in the northern part of the territory.

Reindeer and dogs are the most numerous domestic animals.

FAIRBANKS, in the interior, is the largest city, Juneau

is the capital. Nome and St. Michael are ports on Bering Sea north of the Yukon River.

The government of the United States is going to build more than a thousand miles of railroads in order to develop the coal mines and other resources of Alaska.

Philippine Islands. The Philippine Islands were our chief prize at the close of the Spanish-American War. Luzon and Mindanao are the largest islands. The climate is tropical and the rainfall is abundant; but the heat is moderated by ocean breezes. About three fourths

Hemp factory, Philippine Islands.

of the surface is covered with valuable forests. Most of the civilized inhabitants are farmers. Rice, Manila hemp, coconuts, tobacco, and sugar are the principal crops. Rice is the chief food of the people. The meat of the coconut when dried is called copra. From copra, coconut oil is extracted which is extensively used in the manufacture of soap. Manila hemp is made into a great variety of articles, ranging from ropes and twine to fine lace. The carabao is the chief farm animal.

Most of the people belong to the Brown race. They

are called Filipinos. There are also several thousand dwarfs who belong to the Black race. They are called Negritos. Several thousand Americans are employed in the schools, the army, and the government. Many Chinese live in the Philippine Islands.

The chief exports of the Philippine Islands are hemp, copra, and tobacco. The chief imports are rice, cotton goods, and manufactures of iron and steel.

Manila, the chief city, is the leading seaport of the Philippines. Cigars and cigarettes, shoes, cotton cloth, sugar, and ships are among the chief manufactures of Manila. Manila Bay was the scene of Dewey's victory over the Spanish fleet.

Hawaiian Islands. The Hawaiian Islands lie in the midst of the Pacific Ocean. They constitute a territory of the United States.

The soil is of volcanic origin and is very fertile. The chief crops are sugar cane, rice, and pineapples. The value of the sugar cane is about nine tenths of the total value of all the crops. The chief manufacturing industries are the manufacture of sugar, cleaning and polish-

Surf-riding. The native Hawaiian balances himself upon a board while the wave carries him into the shore.

ing rice, and canning pineapples. Sugar and canned fruits are the chief exports, nearly all of these goods going to the United States.

The people consist of Japanese, native Hawaiians, Chinese, Portugese, and Americans. The native Hawaiians are noted as expert musicians, swimmers, and horsemen. Education is compulsory, and the English language is taught in the schools.

Honolulu, situated on the best harbor of the islands, is the capital. Steamships call there on the voyage across the Pacific.

Other Possessions of the Pacific. The Samoan Islands are halfway between the Panama Canal and Australia. The largest islands belong to Germany. Tutuila, and a few other small islands, belong to the United States. The harbor of Pago Pago on Tutuila is a naval station of the United States. Guam, the largest island of the Marianas, was ceded to the United States at the close of the Spanish-American War. It is used by the United States as a naval station. It is also a relay station for the American cable connecting San Francisco and Manila.

Porto Rico. Porto Rico became a possession of the United States at the end of the Spanish-American War. Since that time the island has prospered and the people have been given a share in the government. In the schools the English language is taught. About one third of the population are negroes.

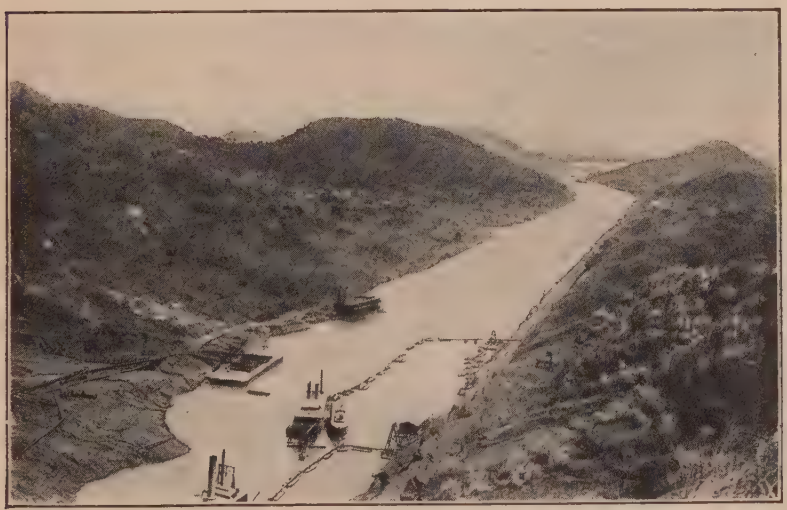
Farming is the chief occupation and sugar is the chief crop. Tobacco, coffee, pineapples, and bananas are also leading crops. The chief manufacturing industries of the islands are the manufacture of sugar and molasses, making cigars and cigarettes, and cleaning and polishing coffee. The products of these industries constitute the chief exports of Porto Rico.

San Juan and Ponce are the principal cities.

Canal Zone. In order to operate the Panama Canal and protect it in case of war, it is necessary to control the land on both sides of this waterway. The use and control of the Canal Zone was given to the United States by the Republic of Panama. COLON is the port at the Atlantic end of the canal. The city of PANAMA is the port at the Pacific end. These cities are not included in the Canal Zone, but belong to the Republic of Panama.

The greater part of the canal stands at an elevation much above the sea level, and the ships are raised and lowered by locks. These locks are wonders of engineering skill. Although the canal enables vessels to sail from ocean to ocean, the water of one ocean does not flow into the other. Part of the canal route is through Gatun Lake which was formed by damming the Chagres River. From this lake fresh water flows to the Atlantic Ocean and in the opposite direction to the Pacific.

Through the Panama Canal the distance between New York and San Francisco is 5,262 miles; while through the Strait of Magellan it is 13,135 miles.



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A section of the Panama Canal.

Questions

1. How far is Manila from San Francisco? How far is Colon from the city of New York?
2. What are the chief products of the Philippine Islands? Hawaiian Islands? Alaska? Porto Rico? What are the leading exports of each of these possessions?
3. Which possessions in the Pacific are valuable mainly as naval stations?
4. What is copra?
5. Where is the Canal Zone?
6. How much shorter is an ocean voyage between New York and San Francisco by way of the Panama Canal than by way of Cape Horn? (See map, pages 178, 179.)

Exercises

Obtain railroad and steamship folders and plan a trip from your home to Manila.

Plan a trip to Porto Rico and the Panama Canal.

Plan a trip from your home to Alaska.

SUMMARY AND COMPARISON

The United States is the leading country of the Western Hemisphere and the youngest of the great nations of the world. Freedom of speech and of religious and political faith, education for all the people, and equal opportunity for personal advancement in every field of enterprise, are cardinal principles of the American people.

The United States is rich in the gifts of nature. Every year we are putting into use resources that have been lying undeveloped, and are discovering new sources of wealth. The ambition and ability of our people in the use of our natural advantages make the United States the richest nation in the world. In no other country is the annual output of iron and copper ore and coal so great. In the production of precious metals the United States ranks second. We raise more wheat than any other country, and our crops of corn and cotton are greater than those of all the rest of the world. Our mines, forests, farms, and fisheries supply the raw materials which enable us to lead the world in manufacturing. Our iron and steel mills especially outrank those of every other country.

So abundant are our resources that for a long time we were wasteful in our use of them. We have come to realize that these sources of wealth are not inexhaustible. We now maintain the fertility of our farms, guard our mines against waste, protect our forests against fires and insect ravages, conserve our water power, and protect our wild animal life.

Most of our people enjoy a higher standard of living than the citizens of other lands. In miles of railroads, in the use of the telephone, in countless comforts and conveniences we surpass every other country. Europe finds here a market for her costly wares and luxuries, and to

a considerable extent we follow the fashions set by the great European cities, especially in dress. From Europe have come millions of sturdy immigrants whose strength and skill have helped us develop our natural resources and build up the American nation.

Questions

1. Which sections of the United States produce most of the precious metals? Which produce most of the coal? Where are the most extensive iron mines? Which are the leading copper states?
2. Which part of the United States grows cotton, but does not manufacture cotton textiles? Which part manufactures cotton goods, but does not grow the cotton? Where is cotton grown and also manufactured into cloth?
3. Which is the most important sugar-cane state? In which states are sugar beets raised extensively?
4. In which section are most of the national forests?
5. What large rivers are near the southern edge of the glacial drift?

Exercises

Trace on the map (page 196) the longest journey you can make from Portland, Maine. List the important cities along the route; use the scale of miles to determine the distance between them; collect post cards of scenes in each city; write a short account of the industries in each; and mention other points of interest about the journey.

Trace a similar journey from St. Louis; from Pittsburgh.

From railroad folders and official guides learn the names of the railroads shown on the map, pages 188, 189.

Trace on the map (pages 188, 189) the route you would take in traveling from your home to several of the largest cities of the United States. Trace the route you would take in going from New York to San Francisco; from St. Paul to Seattle.

NORTH POLE
ARCTIC OCEAN
GREENLAND
ICELAND
ASIA
Behring's Str.
Bering Sea
ARCTIC CIRCLE
NORTH AMERICA
PACIFIC OCEAN
ATLANTIC OCEAN
TROPIC OF CANCER
Gulf of Mexico
WEST INDIES
Caribbean Sea
ISTHMUS OF PANAMA
EQUATOR
SOUTH AMERICA
TROPIC OF CAPRICORN
NEW ZEALAND
Cape Horn
ANTARCTIC CIRCLE
ANTARCTIC OCEAN
SOUTH POLE

TABLES FOR REFERENCE

The United States.

State	Area in Sq. Miles.	Pop. 1910	Capital
Alabama	51,998	2,138,093	Montgomery
Arizona	113,956	204,354	Phoenix
Arkansas	53,335	1,574,449	Little Rock
California	158,297	2,377,549	Sacramento
Colorado	103,948	799,024	Denver
Connecticut	4,965	1,114,756	Hartford
Delaware	2,370	202,322	Dover
Florida	58,666	752,619	Tallahassee
Georgia	59,265	2,609,121	Atlanta
Idaho	84,313	325,594	Boise
Illinois	56,665	5,638,591	Springfield
Indiana	36,354	2,700,876	Indianapolis
Iowa	56,147	2,224,771	Des Moines
Kansas	82,158	1,690,949	Topeka
Kentucky	40,598	2,289,905	Frankfort
Louisiana	48,506	1,656,388	Baton Rouge
Maine	33,040	742,371	Augusta
Maryland	12,327	1,295,346	Annapolis
Massachusetts	8,266	3,366,416	Boston
Michigan	57,980	2,810,173	Lansing
Minnesota	84,682	2,075,708	St. Paul
Mississippi	46,865	1,797,114	Jackson
Missouri	69,420	3,293,335	Jefferson City
Montana	146,572	376,053	Helena
Nebraska	77,520	1,192,214	Lincoln
Nevada	110,690	81,875	Carson City
New Hampshire	9,341	430,572	Concord
New Jersey	8,224	2,537,167	Trenton
New Mexico	122,634	327,301	Santa Fé
New York	49,204	9,113,614	Albany
North Carolina	52,426	2,206,287	Raleigh
North Dakota	70,837	577,056	Bismarck
Ohio	41,040	4,767,121	Columbus
Oklahoma	70,057	1,657,155	Oklahoma City
Oregon	96,699	672,765	Salem
Pennsylvania	45,126	7,665,111	Harrisburg
Rhode Island	1,248	542,610	Providence
South Carolina	30,989	1,515,400	Columbia
South Dakota	77,615	583,888	Pierre
Tennessee	42,022	2,184,789	Nashville
Texas	265,896	3,896,542	Austin
Utah	84,990	373,351	Salt Lake City
Vermont	9,564	355,956	Montpelier
Virginia	42,627	2,061,612	Richmond
Washington	69,127	1,141,990	Olympia
West Virginia	24,170	1,221,119	Charleston
Wisconsin	56,066	2,333,860	Madison
Wyoming	97,914	145,965	Cheyenne
Part of Gt. Lakes	61,750		

TERRITORIES, ETC.

Dist. of Columbia	70	331,069	
Alaska	590,884	64,356	Juneau
Guam	210	9,000	Agaña
Hawaii	6,449	191,909	Honolulu
Philippines ('03)	115,026	7,635,426	Manila
Porto Rico	3,435	1,118,012	San Juan
Pan. Canal Zone	474	50,000	
Samoan Is., etc.	77	6,100	
Soldiers and Sailors abroad		55,608	

Total Population, 1910, not including the Philippines, Guam, Samoa, or Canal Zone, 93,402,151.

Largest Cities of the United States.

	Population, 1910
New York, N. Y.	4,766,883
Chicago, Ill.	2,185,283
Philadelphia, Pa.	1,549,008
St. Louis, Mo.	687,029
Boston, Mass.	670,585
Cleveland, Ohio	560,663
Baltimore, Md.	558,485
Pittsburgh, Pa.	533,905
Detroit, Mich.	465,766
Buffalo, N. Y.	423,715
San Francisco, Cal.	416,912
Milwaukee, Wis.	373,857
Cincinnati, Ohio	363,591
Newark, N. J.	347,469
New Orleans, La.	339,075
Washington, D. C.	331,069
Los Angeles, Cal.	319,198
Minneapolis, Minn.	301,408
Jersey City, N. J.	267,779
Kansas City, Mo.	248,381
Seattle, Wash.	237,194
Indianapolis, Ind.	233,650
Providence, R. I.	224,326
Louisville, Ky.	223,928
Rochester, N. Y.	218,149
St. Paul, Minn.	214,744
Denver, Col.	213,381
Portland, Ore.	207,214
Columbus, Ohio	181,511
Toledo, Ohio	168,497
Atlanta, Ga.	154,839
Oakland, Cal.	150,174
Worcester, Mass.	145,986
Syracuse, N. Y.	137,249
New Haven, Conn.	133,605
Birmingham, Ala.	132,685
Memphis, Tenn.	131,105
Scranton, Pa.	129,867
Richmond, Va.	127,628
Paterson, N. J.	125,600
Omaha, Neb.	124,096
Fall River, Mass.	119,295
Dayton, Ohio	116,577
Grand Rapids, Mich.	112,571
Nashville, Tenn.	110,364
Lowell, Mass.	106,294
Cambridge, Mass.	104,839
Spokane, Wash.	104,402
Bridgeport, Conn.	102,054
Albany, N. Y.	100,253
Hartford, Conn.	98,915
Trenton, N. J.	96,815
New Bedford, Mass.	96,652
San Antonio, Tex.	96,614
Reading, Pa.	96,071
Camden, N. J.	94,538
Salt Lake City, Utah	92,777
Dallas, Tex.	92,104
Lynn, Mass.	89,336
Springfield, Mass.	88,926
Wilmington, Del.	87,411
Des Moines, Iowa	86,368

NORTH POLE
ARCTIC OCEAN
ARCTIC CIRCLE
EUROPE
EURASIA
ASIA
PACIFIC OCEAN
Iceland
British Isles
Japan Sea
Mediterranean Sea
ISTHMUS OF SUEZ
TROPIC OF CANCER
Arabian Sea
Bay of Bengal
EAST INDIES
EQUATOR
AFRICA
INDIAN OCEAN
MADAGASCAR
TROPIC OF CAPRICORN
AUSTRALIA
Cape of Good Hope
TASMANIA
ATLANTIC OCEAN
ANTARCTIC CIRCLE
ANTARCTIC OCEAN
SOUTH POLE

Area and Population of Grand Divisions and Countries.

The Grand Divisions	Area, Sq. Miles	Population
North America	9,431,000	129,353,000
South America	6,856,000	48,630,000
Europe	3,842,000	452,161,000
Asia	17,056,000	949,730,000
Africa	11,512,000	140,938,000
Australia, etc.	3,456,000	7,323,000
South Polar Lands	5,700,000	

North America		
Canada:	*3,759,726*	*7,206,000*
Alberta	253,540	375,000
Br. Columbia	372,625	393,000
Manitoba	251,845	456,000
N. Brunswick	27,992	352,000
Nova Scotia	21,429	492,000
Ontario	369,257	2,523,000
Prince Edward I.	2,162	94,000
Quebec	699,594	2,003,000
Saskatchewan	250,650	492,000
Yukon	207,076	8,000
N. W. Terr.	1,273,016	17,000
Part of Gt. Lakes	30,540	
Central America:		
Br. Honduras	7,560	41,000
Costa Rica	18,689	380,000
Guatemala	43,641	1,842,000
Honduras	44,274	554,000
Nicaragua	49,552	600,000
Panama	33,302	419,000
Pan. Canal Zone	474	50,000
Salvador	8,170	1,707,000
Greenland	837,837	13,000
Mexico	767,258	15,063,000
Newfoundland, etc.	49,773	245,000
U. S. & Alaska	3,679,403	92,037,000

For United States, see first page of tables.

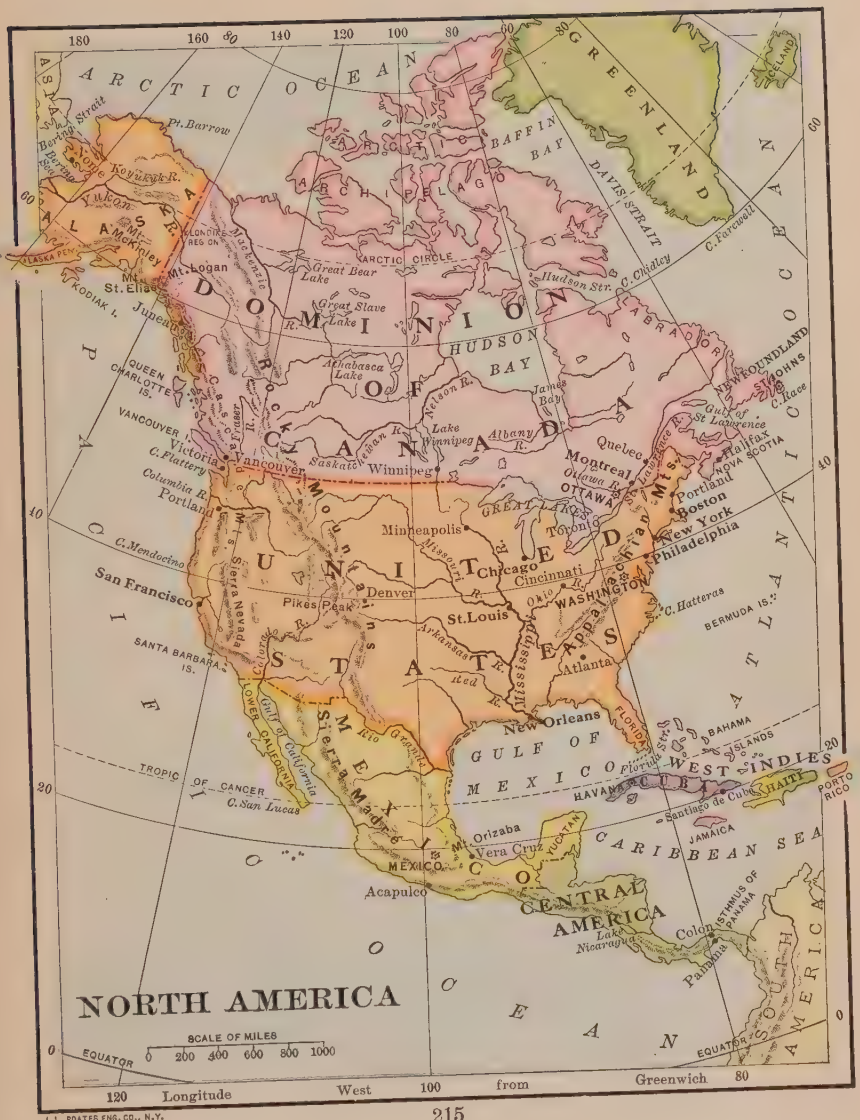
West Indies:		
Cuba	44,015	2,220,000
Haiti	11,072	2,030,000
S. Domingo	18,756	674,000
Jamaica	4,841	831,000
Porto Rico	3,435	1,118,000
Other Islands	9,341	2,302,000

South America		
Argentina	1,083,551	7,192,000
Bolivia	442,636	2,268,000
Brazil	3,300,816	20,515,000
Chile	293,050	3,255,000
Colombia	465,714	4,320,000
Ecuador	118,627	1,500,000
Falkland Is., etc.	6,573	2,000
Guiana:		
British	95,174	296,000
Dutch	49,846	90,000
French	30,465	49,000
Paraguay	97,726	800,000
Peru	438,996	4,586,000
Uruguay	68,996	1,043,000
Venezuela	363,822	2,714,000

Europe	Area, Sq. Miles	Population
Albania	10,900	900,000
Austria-Hungary	*261,294*	*51,324,000*
Austria	115,924	28,574,000
Hungary	125,607	20,842,000
Bosnia, etc.	19,702	1,908,000
Belgium	11,369	7,517,000
Bulgaria	43,300	4,800,000
Denmark	15,360	2,775,000
Iceland	39,756	85,000
France	207,217	39,602,000
German Empire	210,232	64,904,000
Greece	45,845	4,600,000
Italy	110,687	34,687,000
Luxemburg	999	247,000
Montenegro	5,600	500,000
Malta & Gibraltar	127	253,000
Netherlands	12,562	5,858,000
Norway	124,122	2,392,000
Portugal	34,507	5,016,000
Roumania	54,300	7,400,000
Russia in Europe	2,113,214	138,890,000
Servia	33,600	4,300,000
Spain	191,986	19,083,000
Sweden	172,920	5,522,000
Switzerland	15,964	3,742,000
Turkey in Europe	9,700	1,600,000
United Kingdom	*121,367*	*45,366,000*
England	50,839	34,043,000
Ireland	32,352	4,382,000
Scotland	30,405	4,760,000
Wales	7,468	2,032,000
Man & Channel Is.	303	149,000
Arctic Islands	33,506	

Asia		
Aden, etc.	15,870	252,000
Afghanistan	240,937	4,550,000
Arabia	879,984	950,000
Baluchistan	141,628	811,000
Ceylon	25,449	3,642,000
Cyprus	3,584	237,000
Chinese Rep.	*4,300,900*	*426,047,000*
China	1,496,972	407,337,000
Manchuria	362,671	8,500,000
Mongolia	1,076,337	2,580,000
Tibet	814,319	6,430,000
Turkestan	550,601	1,200,000
East Indies:		
Borneo Group	289,948	1,955,000
Celebes Group	71,784	852,000
Java Group	50,777	30,098,000
Moluccas, etc.	75,344	1,240,000
Sumatra Group	185,039	4,294,000
Egypt (part of)	22,781	25,000
French Indo-China, etc.	256,463	16,573,000
Goa (Port. India)	1,413	605,000
Hongkong and Weihaiwei	687	513,000
India (British)	1,917,621	321,451,000

Continued on following page of tables.



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Area and Population of Grand Divisions and Countries (*continued*).

	Area, Sq. Miles	Population
Japanese Empire	177,359	55,482,000
Korea	84,251	13,125,000
Kiauchau	270	169,000
Nepal & Bhutan	72,590	3,200,000
Oman	74,842	1,000,000
Persia	635,163	9,000,000
Philippines	115,026	7,636,000
Russian Emp.	*6,655,759*	*26,939,000*
Bokhara	79,154	1,250,000
Khiva	23,167	800,000
Siberia	4,899,359	8,220,000
The Steppes	706,253	3,282,000
Transcaucasia	95,801	6,696,000
Turkestan, etc.	641,578	6,691,000
Aral & Caspian	195,551	
Siam	244,798	6,320,000
Straits Settlements	35,571	2,676,000
Turkey in Asia	683,155	17,153,000
Africa		
Abyssinia	311,880	8,330,000
Belgian Kongo	926,872	15,000,000
British Possessions:		
South Africa:		
Cape of G'd Hope	276,988	2,563,000
Transvaal	114,286	1,677,000
Orange Free State	48,340	527,000
Natal	34,710	1,192,000
Rhodesia	408,494	1,771,000
Nyassaland	43,608	970,000
Other Br. S. Afr.	270,316	731,000
East Africa:		
East Afr. Prot.	315,533	4,038,000
Uganda Prot.	117,681	3,120,000
Somaliland	59,846	300,000
Mauritius, etc.	2,304	413,219
Zanzibar	960	197,000
West Africa:		
Nigeria	361,004	17,128,000
Gold Coast	78,533	1,503,000
Gambia	3,707	146,000
Sierra Leone	26,911	1,389,000
St. Helena	126	4,000
Egypt	400,000	11,287,000
Anglo-Egyptian Sudan	785,000	2,600,000
French Possessions:		
French West Africa	680,617	11,100,000
Sahara	2,309,032	791,000
Equatorial Afr.	597,000	9,000,000
Morocco	176,062	7,000,000
Algeria	343,629	5,564,000
Madagascar, etc.	230,183	3,325,000
Tunis	64,623	1,923,000
Somali Coast	8,108	208,000
German Possessions:		
East Africa	374,234	10,011,000
Southwest Africa	317,953	120,000
Kamerun	274,000	4,000,000
Togo Land	33,668	1,000,000
Italian Possessions:		
Somaliland	146,718	400,000
Eritrea	42,471	331,000
Tripoli	405,791	1,000,000
Liberia	36,834	1,500,000
Portuguese Possessions:		
Angola, etc.	484,800	4,161,000
East Africa	295,779	3,120,000
Guinea	13,089	820,000
Cape Verde Is.	1,476	147,000
Spanish Possessions:		
Rio de Oro, etc.	82,124	236,000
Canary Islands	2,944	420,000
Australia, etc.		
Com. of Australia:	*2,972,865*	*4,455,000*
New S. Wales	310,660	1,648,000
Northern Terr.	523,620	3,000
Queensland	668,497	606,000
S. Australia	380,069	409,000
Tasmania	26,215	191,000
Victoria	87,884	1,316,000
W. Australia	975,920	282,000
New Zealand	104,663	1,071,000
New Guinea Gr.	311,032	774,000
Hawaiian Is.	6,449	192,000
Other Pac. Is.	61,435	831,000

Population of Cities in North and South America.

North America

Canada (1911)

Montreal	471,000
Toronto	377,000
Winnipeg	136,000
Vancouver	100,000
Ottawa	87,000
Hamilton	82,000
Quebec	78,000

Central America

Guatemala	90,000
San Salvador	60,000
Panama	35,000

Mexico

Mexico	471,000
Guadalajara	119,000
Puebla	101,000

United States
(See first page of Tables)

West Indies

Havana, Cuba	320,000
Port au Prince, Haiti	100,000
Ponce, Porto Rico	63,000

South America

Argentina

Buenos Aires	1,320,000
Rosario	176,000
La Plata	101,000
Tucuman	75,000

Chile

Santiago	408,000
Valparaiso	188,000

Brazil

Rio de Janeiro	1,000,000
São Paulo	400,000
Bahia	230,000
Para	200,000
Pernambuco	150,000
Porto Alegre	100,000
Manaos	50,000

Other Countries

La Paz, Bolivia	79,000
Bogota, Colombia	150,000
Medellin, "	60,000
Guayaquil, Ecuador	80,000
Quito, "	70,000
Asuncion, Paraguay	84,000
Lima, Peru	140,000
Montevideo, Urug.	291,000
Caracas, Venezuela	90,000

SOUTH AMERICA
WEST INDIES
CARIBBEAN SEA
PACIFIC OCEAN
ATLANTIC OCEAN
Pt. Gallinas
Barranquilla
Maracaibo
Lake Maracaibo
Gulf of Darien
Panama
Bay of Panama
CURAÇAO
Valencia
La Guaira
Barcelona
TRINIDAD I. (Br.)
CARACAS
Delta of the Orinoco R.
GEORGETOWN
PARAMARIBO
CAYENNE
Bolivar
Merida
VENEZUELA
Mt. Roraima
Mt. Ioutu
GUIANA
(Br.) Dutch (Fr.)
Cassiquiare R.
COLOMBIA
BOGOTA
Magdalena R.
Cauca R.
Atrato R.
Mt. Chimborazo
Mt. Cotopaxi
Guayaquil
ECUADOR
Gulf of Guayaquil
Pt. Parina
Napo R.
Yapura R.
Rio Negro
Manaos
Amazon R.
MARAJO I.
Para R.
EQUATOR
Para
Maranhao
C. St. Roque
Ceara
Pernambuco
Bahia
Diamantina
PYRENOPOLIS
MATTO GROSSO
Goyaz
Cuyaba
Guapore R.
Madeira R.
Tapajos R.
Xingu R.
Tocantins R.
Araguay R.
Sao Francisco R.
Purus R.
Juruá R.
Tamari R.
Jurua R.
Mattoria R.
Falls
BRAZIL
PERU
Pasco
LIMA
Rimac R.
Callao
Cuzco
Mt. Misti
Arequipa
Mollendo
Mt. Sahama
Cochabamba
Mt. Illimani
La Paz
Mt. Tricaca
Mt. Sorata
SUCRE
Potosi
Iquique
BOLIVIA
Petropolis
Sao Paulo
Santos
C. Frio
RIO DE JANEIRO
TROPIC OF CAPRICORN
DESERT OF ATACAMA
Antofagasta
EL GRAN CHACO
ASUNCION
PARAGUAY
Parana R.
Paraguay R.
Tucuman
Cordova
Parana
Porto Alegre
Rio Grande do Sul
URUGUAY
Mendoza
Rosario
Mt. Aconcagua
Valparaiso
SANTIAGO
JUAN FERNANDEZ IS. (Chile)
Talca
BUENOS AIRES
La Plata
La Plata R.
MONTEVIDEO
C. Corrientes
Concepcion
Bahia Blanca
CHILOE I.
CHONOS ARCHIPELAGO
St. George Bay
WELLINGTON I.
Strait of Magellan
TIERRA DEL FUEGO
Punta Arenas
Cape Horn
FALKLAND IS. Br.
S. GEORGIA I. (Br.)
SCALE OF MILES
0 200 400 600 800 1000
Same scale as large map
NEW YORK
Area 49,204 sq. m.
80 70 60 50 40
10 0 10 20 30 40 50
100 90 80 Long. 70 West 60 from 50 Green. 40 30 20

Population of Cities in the Eastern Hemisphere

Europe

	Population
Austria-Hungary	
Vienna	2,031,000
Budapest	880,000
Trieste	230,000
Prague	225,000
Belgium	
Brussels	646,000
Antwerp	309,000
Denmark	
Copenhagen	462,000
France	
Paris	2,888,000
Marseilles	551,000
Lyons	524,000
Bordeaux	262,000
Lille	218,000
Germany	
Berlin	2,071,000
Hamburg	932,000
Munich	595,000
Leipzig	588,000
Dresden	547,000
Cologne	516,000
Breslau	512,000
Frankfurt-am-Main	415,000
Düsseldorf	358,000
Nuremberg	332,000
Charlottenburg	305,000
Hanover	302,000
Essen	295,000
Chemnitz	287,000
Stuttgart	286,000
Magdeburg	280,000
Bremen	247,000
Königsberg	246,000
Rixdorf	237,000
Stettin	236,000
Duisberg	230,000
Dortmund	214,000
Kiel	211,000
Italy	
Naples	723,000
Milan	599,000
Rome	539,000
Turin	428,000
Palermo	342,000
Genoa	272,000
Florence	233,000
Netherlands	
Amsterdam	581,000
Rotterdam	436,000
Hague	289,000
Norway	
Christiania	244,000
Portugal	
Lisbon	356,000
Roumania	
Bucharest	338,000
Russia	
St. Petersburg	1,908,000
Moscow	1,618,000
Warsaw	848,000
Odessa	540,000
Lodz	394,000
Kief	469,000
Riga	350,000
Kharkof	225,000
Spain	
Madrid	572,000
Barcelona	560,000
Valencia	233,000
Sweden	
Stockholm	342,000
Turkey	
Constantinople	1,200,000
United Kingdom	
England	
London	7,253,000
Liverpool	747,000
Manchester	715,000
Birmingham	526,000
Sheffield	455,000
Leeds	446,000
Bristol	357,000
Bradford	289,000
West Ham	289,000
Hull	278,000
Newcastle	267,000
Nottingham	260,000
Stoke-on-Trent	235,000
Salford	231,000
Portsmouth	231,000
Leicester	227,000
Scotland	
Glasgow	783,000
Edinburgh	320,000
Ireland	
Belfast	386,000
Dublin	309,000

Africa

	Population
Egypt	
Cairo	655,000
Alexandria	332,000
Tunis	
Tunis	250,000

Asia

	Population
China	
Canton	1,000,000
Singan	1,000,000
Hankau	826,000
Tientsin	900,000
Peking	1,300,000
Shanghai	651,000
Fuchau	624,000
Chungking	598,000
Suchau	500,000
Ningpo	350,000
Hangchau	350,000
Hongkong	366,000
Manchuria	
Mukden	200,000
India	
Calcutta	1,222,000
Bombay	979,000
Madras	518,000
Haidarabad	501,000
Rangoon	293,000
Lucknow	260,000
Benares	204,000
Delhi	233,000
Lahore	229,000
Japan	
Tokyo	2,186,000
Osaka	1,227,000
Kyoto	443,000
Yokohama	394,000
Kobe	378,000
Nagoya	378,000
Korea	
Seoul	297,000
Persia	
Teheran	280,000
Tabriz	200,000
Philippines	
Manila	220,000
Siam	
Bangkok	629,000
Straits Settlements	
Singapore	323,000
Turkey	
Damascus	350,000
Smyrna	375,000

Australia

	Population
Sydney	636,000
Melbourne	600,000
Adelaide	192,000

EUROPE
SCALE OF MILES
0 100 200 400 600
On the same scale
NEW YORK
Area
49,204 sq.m.
ATLANTIC OCEAN
ARCTIC OCEAN
NORTH SEA
BALTIC SEA
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
ICELAND
REIKIAVIK
Mt. Hekla
JAN MAYEN I.
NOVAYA ZEMBLA
North Cape
Hammerfest
LOFODEN IS.
ARCTIC CIRCLE
FAROE IS.
SHETLAND IS.
ORKNEY IS.
HEBRIDES
BRITISH ISLES
IRELAND
Glasgow
EDINBURGH
Liverpool
LONDON
St. George Channel
English Channel
NETHERLANDS
BELGIUM
BRUSSELS
Amsterdam
Rotterdam
The Hague
Le Havre
PARIS
FRANCE
BAY OF BISCAY
C. Finisterre
Bordeaux
Lyons
St. Etienne
Mt. Blanc
Pyrenees
SPAIN
PORTUGAL
LISBON
Tagus R.
MADRID
C. St. Vincent
Strait of Gibraltar
Malaga
Gibraltar
Barcelona
BALEARIC IS.
CORSICA
SARDINIA
Marseilles
Genoa
Venice
Trieste
Naples
ROME
ITALY
Palermo
SICILY
Mt. Etna
Messina
Strait of Messina
Ionian Sea
GREECE
ATHENS
CRETE
Smyrna
ASIA MINOR
TURKEY IN ASIA
CYPRUS
Constantinople
Sea of Marmora
Dardanelles
BULGARIA
SOFIA
BELGRADE
SERVIA
ROUMANIA
BUCHAREST
Danube R.
Black Sea
Odessa
Sebastopol
CRIMEA
Sea of Azof
Caucasus Mts.
Mt. Elburz
Baku
Batum
Tiflis
TRANS-CAUCASIA
Astrakhan
Caspian Sea
Volga R.
Ural R.
ASIATIC RUSSIA
Ural Mts.
EUROPEAN RUSSIA
Archangel
White Sea
Dwina R.
LAPLAND
SWEDEN
NORWAY
Gulf of Bothnia
Gulf of Finland
STOCKHOLM
CHRISTIANIA
Skager-Rack
Kattegat
DENMARK
COPENHAGEN
Sound
ST. PETERSBURG
Lake Ladoga
Valdai Hills
Moscow
Riga
Dwina R.
Vilna
Danzig
Hamburg
GERMAN EMPIRE
BERLIN
Warsaw
POLAND
Kiel Canal
Kiel
Kiel Bay
Kief
Dnieper R.
Dniester R.
AUSTRIA
Munich
Danube R.
VIENNA
Budapest
HUNGARY
BERNWITZ
Switzerland
Lake Constance
Rhine R.
Black Forest
Rhone R.
Po R.
Adriatic Sea
Gulf of Venice
Gulf of Lyons
Gulf of Genoa
Tyrrhenian Sea
Gulf of Taranto
Ionian Sea
Gulf of Corinth
Gulf of Salonica
Gulf of Smyrna
Gulf of Adalia
Gulf of Sidra
AFRICA
L.L. POATES CO., N.Y.
10 Longitude West 0 Longitude East 10 from Greenwich 20 30

	Miles
Distance, Earth to Sun	93,000,000
Distance, Earth to Moon	240,000
Diameter of Earth, Polar	7,900
Diameter of Earth, Equatorial	7,926
Degree of Latitude, about	69
Circumference at the Equator	24,900

The Oceans	Area, Square Miles
Pacific, about	71,000,000
Atlantic, about	34,000,000
Indian, about	28,000,000
Antarctic, about	2,700,000
Arctic, about	4,000,000

Heights of Mountains, Plateaus and Peaks

North America	Feet
Rocky Mts.	10,000
Sierra Nevada	9,000
Cascade Mts.	9,000
Sierra Madre	8,500
Coast Ranges	3,000
Appalachian Mts.	2,500
Mexican Plateau	7,500
Mt. McKinley, Alaska	20,464
Mt. Logan, Canada	19,539
Mt. Orizaba, Mexico	18,314
Mt. St. Elias, Alaska	18,010
Mt. Popocatepetl, Mexico	17,784
Mt. Whitney, Cal., Sierra Nevada	14,502
Mt. Shasta, Cal., Cascade Mts.	14,380
Pikes Peak, Col., Rocky Mts.	14,111
Mt. Mitchell, N. C., Appalachians	6,711
South America	
Andes Mts.	13,000
Bolivian Plateau	12,500
Mt. Aconcagua, Argentina	23,860
Mt. Sahama, Bolivia	22,350
Mt. Sorata, Bolivia	21,286
Mt. Illimani, Bolivia	21,030
Mt. Chimborazo, Ecuador	20,517
Mt. Misti, Peru	20,320
Mt. Cotopaxi, Ecuador	19,613
Mt. Tolima, Colombia	18,300
Mt. Icutu, Venezuela	11,000
Mt. Itatiaia, Brazil	9,840
Europe	
Alps Mts., Switzerland	8,500
Pyrenees Mts., Spain	8,000
Ural Mts., Russia	3,500
Kiolen, Norway	3,000
Mt. Blanc, France	15,780
Mt. Etna, Sicily	10,865
Mt. Hekla, Iceland	5,110
Mt. Vesuvius, Italy	4,260
Asia	
Himalaya Mts.	19,000
Karakoram Mts., Tibet	18,500
Thian Shan, Turkestan	18,000
Kuenlun, Tibet	18,000
Caucasus Mts., Russian Empire	10,000
Pamir Plateau	16,000
Tibet Plateau	15,000
Mt. Everest, Nepal	29,002
Mt. Elburz, Caucasus	18,493
Mt. Ararat, Armenia	17,325
Mt. Fujiyama, Japan	12,395
Africa	
Atlas Mts., Morocco	9,000
Abyssinian Plateau	6,500
Mt. Kilimanjaro, Africa	19,780
Mt. Kenia, East Africa	19,000
Mt. Stanley	16,800

Lengths of Great Rivers

North America	Miles
Missouri-Mississippi	4,200
Missouri	2,900
Mississippi	2,600
St. Lawrence	2,100
Mackenzie	2,100
Arkansas	2,000
Yukon	2,000
Colorado	2,000
Nelson-Saskatchewan	1,900
Rio Grande	1,800
Columbia	1,300
Ohio	1,000
Fraser	750
South America	
Amazon	3,500
Parana-Plata	2,600
São Francisco	1,800
Orinoco	1,500
Magdalena	1,100
Australia	
Darling	1,100
Murray	1,100
Europe	
Volga	2,300
Danube	1,800
Dnieper	1,300
Dwina	1,000
Don	1,000
Rhine	800
Asia	
Yangtze	3,100
Ob	3,000
Yenisei	3,000
Hoang	2,800
Lena	2,800
Amur	2,800
Mekong	2,600
Indus	2,000
Euphrates	2,000
Brahmaputra	1,800
Ganges	1,500
Irawadi	1,500
Africa	
Nile	3,900
Niger	2,900
Kongo	2,800
Zambezi	1,600
Orange	1,200

Areas of Great Lakes

North America	Sq. Miles
Superior	31,000
Huron	24,000
Michigan	22,500
Great Bear	14,000
Erie	10,000
Winnipeg	9,000
Ontario	7,250
Nicaragua	3,000
Great Salt	2,300
South America	
Titicaca	3,250
Europe	
Ladoga	7,000
Asia	
Caspian	169,000
Aral	26,000
Baikal	13,000
Balkash	8,500
Dead Sea	350
Africa	
Victoria	32,000
Nyassa	14,000
Tanganyika	14,000
Tchad	10,000

ASIA
SCALE OF MILES
0 200 400 600 800 1000
Same scale as large map
NEW YORK
Area 49,204 sq. m.
L.L. POATES CO., N.Y.
Longitude 60 East from 80 Greenwich
EQUATOR
ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
EUROPEAN RUSSIA
THE STEPPES
SIBERIA
CHINESE EMPIRE
MONGOLIA
TURKESTAN
PERSIA
ARABIA
INDIA
TIBET
JAPAN
EMPIRE OF JAPAN
REPUBLIC OF CHINA
NORTH AMERICA
Bering Sea
Sea of Okhotsk
Sea of Japan
East China Sea
South China Sea
Yellow Sea
Gulf of Aden
Persian Gulf
Red Sea
Bay of Bengal
Arabian Sea
Caspian Sea
Black Sea
Mediterranean Sea
Aral Sea
Lake Baikal
Lake Balkash
Tropic of Cancer
Arctic Circle
Great Wall
Yangtze R.
Yellow R.
Indus R.
Ganges R.
Euphrates R.
Tigris R.
Nile R.
Amur R.
Lena R.
Yenisei R.
Ob R.
Volga R.
Irtish R.
Hwang Ho
Mekong R.
Irrawaddy R.
Salween R.
Brahmaputra R.
Petropavlovsk
C. Lopatka
C. Chelyuskin
New Siberian Is.
Kara Sea
Taymyr Pen.
Nova Zembla
Iceland
British Isles
North Sea
Baltic Sea
St. Petersburg
Moscow
Perm
Tobolsk
Tomsk
Irkutsk
Yakutsk
Verkhoyansk
Okhotsk
Khabarovsk
Vladivostok
Hakodate
Tokyo
Yokohama
Osaka
Nagasaki
Seoul
Fusiyama
Kirin
Harbin
Mukden
Peking
Tientsin
Shanghai
Nanking
Hankau
Hangchau
Canton
Hongkong
Formosa
Philippine Islands
Manila
Samar
Luzon
Mindanao
Sulu Sea
Celebes Sea
Palawan
Borneo
Brunei
Singapore
Straits Settlements
Sumatra
Malacca
Siam
Bangkok
Rangoon
Calcutta
Madras
Bombay
Haidarabad
Lucknow
Delhi
Lahore
Peshawar
Kabul
Kandahar
Afghanistan
Baluchistan
Karachi
Surat
Goa (Port.)
Panjim
Pondicherry
Laccadive Is.
Maldive Is.
Colombo
Ceylon
Andaman Is.
Nicobar Is.
Hue
Saigon
Gulf of Siam
Yarkand
Kashgar
Khiva
Tashkent
Kokand
Samarkand
Merv
Meshed
Teheran
Ispahan
Yezd
Kerman
Bushire
Bassora
Bagdad
Mosul
Aleppo
Damascus
Beirut
Jerusalem
Alexandria
Cairo
Suez
Medina
Mecca
Riad
Aden
Muscat
Hodeida
Smyrna
Constantinople
Athens
Algiers
Tripoli
Tunis
Trebizond
Batoum
Tiflis
Baku
Ararat
Tabriz
Odessa
Orenburg
Chelia binsk
Omsk
Barnaul
Urga
Altai Mts.
Lake Balkash
Lake Aral
Lake Urmia
Lake Van
Caucasus Mts.
Ural R.
Ural Mts.
Lanchau
Singan
Kiaochau
Nanchang
Kiukiang
Wuchang
Ichang
Changsha
Yochow
Chungking
Yunnanfu
Tali
Lassa
Siangtan
Swatow
Amoy
Foochow
Ningpo
Wenchow
Taiwan
Tomsk
Yenisei R.
Lena R.
Amur R.
Sea of Okhotsk
Sea of Japan
Kara Sea
Taymyr Pen.
Arctic Circle
Tropic of Cancer
Equator
Greenwich
Longitude 60 East from 80 Greenwich
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INDEX AND PRONOUNCING VOCABULARY

KEY. — VOWELS: **ā** in **lāte**, **ă** in **făt**, **â** in **câre**, **ä** in **färm**, **à** in **àsk**, **ạ** in **fạll**, **ȧ** in **sofȧ**, **au** in **author**; **ē** in **mē**, **ĕ** in **mĕt**, **bĕrry**, **e** in **veil**, **ẽ** in **tẽrm**, **ê** in **thêre**; **ī** in **fīne**, **ĭ** in **fĭn**, **ï** in **polïce**; **ō** in **nōte**, **ŏ** in **nŏt**, **ȯ** in **sȯn**, **ô** in **fôr**, **o** in **do**, **o** in **wolf**; **ū** in **tūne**, **ŭ** in **nŭt**, **u** in **rude** (= **o**), **u** in **full**, **ü** = a sound midway between **oo** and **ee**, **ua** = **wa**, **ue** = **we**; **ȳ** in **mȳ**, **y̆** in **hy̆mn**. CONSONANTS: **ç** in **çent**, **maçhine**, **c** in **can**, **chasm**; **ġ** in **ġem**, **g** in **get**; **K** = the guttural sound represented by **ch** in German words; **n** = **ng**, **Ñ** = **ng** in its effect (nasal) on the preceding vowel, but is itself silent; **s** = **z**; **th** in **thine**. *Italic letters are silent.*

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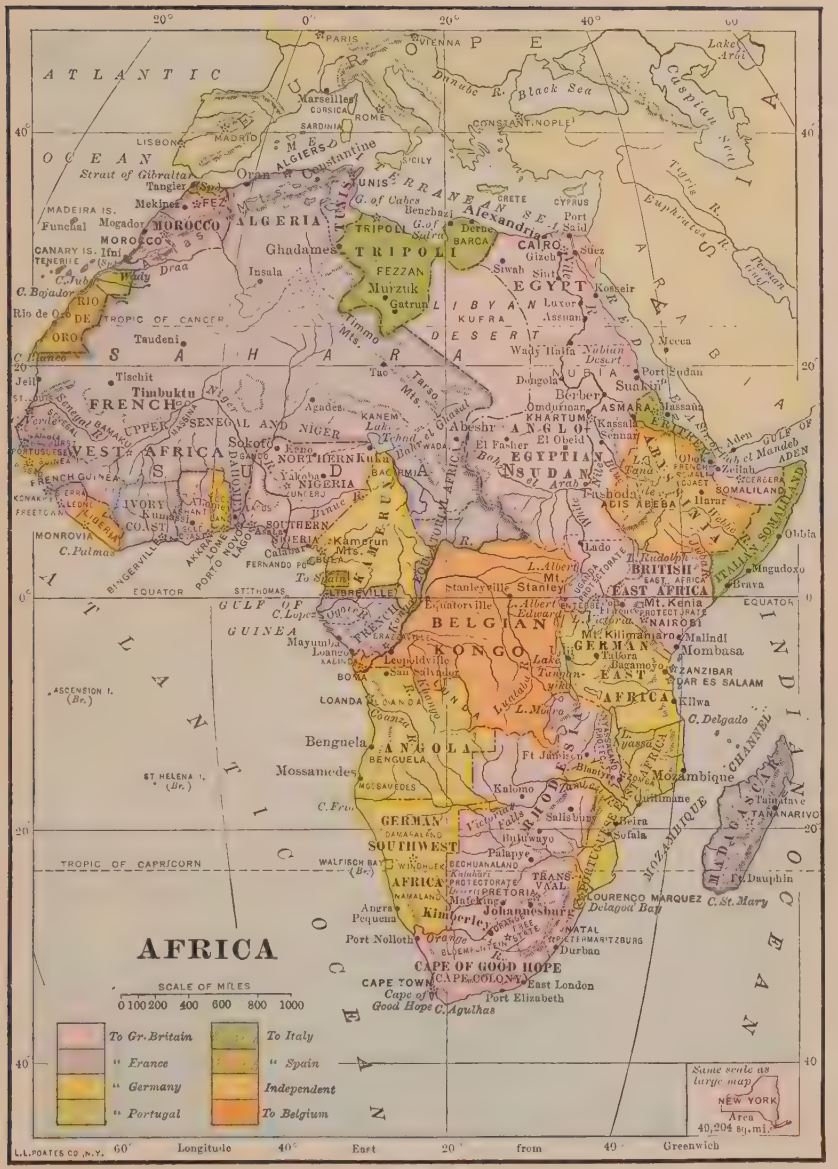
AFRICA
SCALE OF MILES
0 100 200 400 600 800 1000
To Gr. Britain
" France
" Germany
" Portugal
To Italy
" Spain
Independent
To Belgium
Same scale as large map
NEW YORK
Area
40,204 sq. mi.
ATLANTIC OCEAN
INDIAN OCEAN
SAHARA
EGYPT
LIBYA
ARABIA
ABYSSINIA
FRENCH WEST AFRICA
FRENCH SUDAN
NIGERIA
BELGIAN KONGO
ANGOLA
GERMAN EAST AFRICA
BRITISH EAST AFRICA
ITALIAN SOMALILAND
GERMAN SOUTHWEST AFRICA
CAPE COLONY
CAPE OF GOOD HOPE
MADAGASCAR
TROPIC OF CANCER
TROPIC OF CAPRICORN
EQUATOR
CAIRO
KHARTUM
ADIS ABEBA
NAIROBI
ZANZIBAR
DAR ES SALAAM
MOMBASA
LOURENCO MARQUEZ
Delagoa Bay
Johannesburg
Kimberley
Durban
CAPE TOWN
Cape of Good Hope
Port Elizabeth
East London
C. Agulhas
Mozambique
Tananarivo
Tamatave
Ft. Dauphin
C. St. Mary
Beira
Quilimane
Mossamedes
Benguela
Loanda
Leopoldville
Stanleyville
Lake Victoria Nyanza
Lake Tanganyika
Lake Nyassa
Lake Chad
Lake Rudolph
Lake Albert Edward
Lake Albert
Lake Tsana
Lake Aral
Caspian Sea
Black Sea
Red Sea
Mediterranean Sea
Persian Gulf
Gulf of Aden
Gulf of Guinea
Gulf of Mandeb
Gulf of Suez
Gulf of Sidra
Gulf of Cabes
Gulf of Sirte
Nile R.
Niger R.
Congo R.
Zambesi R.
Orange R.
Limpopo R.
Euphrates R.
Tigris R.
Danube R.
Jordan R.
Suez Canal
Mozambique Channel
Madagascar Channel
Strait of Gibraltar
Canary Is.
Madeira Is.
Azores
Ascension I. (Br.)
St. Helena I. (Br.)
Cape Verde Is.
Sahara Desert
Nubian Desert
Arabian Desert
Libyan Desert
Kufra Desert
Tibesti Mts.
Tarso Mts.
Kamerun Mts.
Timmo Mts.
Atlas Mts.
Abyssinian Mts.
Ruwenzori Mts.
Kilimanjaro Mt.
Mt. Kenia
Mt. Elgon
Mt. Ruwenzori
Mt. Sinai
Mt. Ararat
Mt. Lebanon
Mt. Hermon
Mt. Olympus
Mt. Etna
Mt. Vesuvius
Mt. Blanc
Mt. Pyrenees
Mt. Carpathian
Mt. Caucasus
Mt. Ural
Mt. Elbrus
Mt. Ararat
Mt. Lebanon
Mt. Hermon
Mt. Olympus
Mt. Etna
Mt. Vesuvius
Mt. Blanc
Mt. Pyrenees
Mt. Carpathian
Mt. Caucasus
Mt. Ural
Mt. Elbrus
Longitude 60° West from 40° Greenwich
L.L. POATES CO., N.Y.

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AUSTRALIA
AND
PACIFIC ISLANDS
SCALE OF MILES
0 200 400 600 800 1000
Same scale as large map
NEW YORK
Area
49,204 sq. miles
100 Longitude 120 East from 140 Greenwich 160 West 160
EQUATOR
TROPIC OF CAPRICORN
INDIAN OCEAN
PACIFIC OCEAN
ASIA
AUSTRALIA
NEW ZEALAND
PHILIPPINE ISLANDS (U.S.)
BORNEO
CELEBES
NEW GUINEA
SUMATRA
JAVA
SIAM
HAINAN
LUZON
MINDORO
SAMAR
MINDANAO
PALAWAN
SULU SEA
CELEBES SEA
MOLUCCAS OR SPICE IS.
PELEW IS. (Ger.)
LADRONE IS. (Ger.)
GUAM (U.S.)
CAROLINE IS. (Ger.)
MARSHALL IS. (Ger.)
ADMIRALTY IS.
BISMARCK ARCHIPELAGO (Ger.)
NEW MECKLENBURG
NEW POMERANIA
BOUGAINVILLE
CHOISSEL I.
ISABELLA I.
SOLOMON IS.
LOUISIADE ARCH. (Gr.Br.)
SANTA CRUZ IS. (Gr.Br.)
GILBERT IS. (Gr.Br.)
ELLICE IS. (Gr.Br.)
FIJI IS.
VANUA LEVU
VITI LEVU (Gr.Br.)
SUVA
SAMOA
UPOLU (Ger.)
SAVAII
TUTUILA (U.S.)
TONGA OR FRIENDLY IS. (Gr.Br.)
NEW HEBRIDES
ERROMANGO I.
LOYALTY IS. (Fr.)
NEW CALEDONIA (Fr.)
NORFOLK I.
KERMADEC IS. (Gr.Br.)
CORAL SEA
TORRES STR.
GULF OF CARPENTARIA
GREAT BARRIER REEF
NORTHERN TERRITORY
WESTERN AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
SOUTH AUSTRALIA
GREAT VICTORIA DESERT
GREAT AUSTRALIAN BIGHT
TASMANIA
Palmerston
Cooktown
Mackay
Rockhampton
Maryborough
Brisbane
Ipswich
Roebourne
Northwest C.
Geraldton
Perth
Fremantle
Bunbury
Albany
C. Leeuwin
C. Leveque
Port Augusta
Adelaide
Port Lincoln
Lake Eyre
Lake Torrens
Murray R.
Darling R.
Bathurst
Maitland
Newcastle
Sydney
Parramatta
Goulburn
C. Howe
Ballarat
Geelong
Melbourne
Wilsons Prom.
Launceston
Hobart
North C.
Auckland
North Island
Cook Str.
Nelson
Wellington
South Island
Christchurch
Dunedin
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